The Milroy Lectures

ON

QUARANTINE.

Delivered at the Royal College of Physicians of London,

BY WILLIAM COLLINGRIDGE, M.A., LL.M., M.D., D.P.H. CANTAB.,

MEDICAL OFFICER OF HEALTH OF THE PORT OF LONDON.

LECTURE I.[1]

Delivered on March 11th.

MR. PRESIDENT AND GENTLEMEN,—I have, in the first place, to express my gratitude for my nomination to the honourable position of Milroy lecturer. I have selected as a subject Quarantine, limiting myself almost entirely to the progress of this system in England, its development, and subsequent supersession by the more rational system of medical inspection—a supersession which has only become possible on account of the great attention which in recent times has been paid to the sanitation of the country generally and to the gradual but steady growth of public opinion, which has been taught to rely upon the general health conditions of the whole country as the only means of preserving the people from the ravages of epidemic disease. I was led to choose this subject, not only because I deem it to be of the utmost practical importance to a commercial country, but also of the close connexion of the subject with the name of Dr. Gavin Milroy, the founder of these lectures. To his labours to overthrow an obsolete and oppressive system and to further the interests of commerce without jeopardising the public health is due to a large extent the present free and unrestricted intercourse enjoyed with all parts of the world by our merchant navy. Though it was not his lot to see the full fruition of his work, his name will always be honourably associated with the public health defence of the nation, to the furthering and the development of which he freely devoted so large a portion of his life work. The laws of quarantine, whatever form they may take, are framed with the idea of protecting a nation from the importation of disease, a risk which is practically in proportion to the extent of its trade. Such regulations are sanctioned in principle by international law, which, recognising the necessity for the constant interchange of goods and commodities between various States, allows each country to protect itself in any way that it may deem fit or expedient. Thus, whatever restrictions any one State may adopt, these must be submitted to by all others as the only conditions under which trade with such a State is possible. It is true that from time to time representations have been made by our Government to induce the relaxation of some unusually harsh or stringent regulation, but this has only been as a question of grace or favour when there appeared to be some exceptional reason, and not as a matter of international right.

Few subjects can have the same vital interest for a country such as England (whose very existence depends upon her commercial intercourse with other countries) as quarantine. On the one hand is the extreme importance of free and untrammelled commerce, and on the other the no less essential point of safeguarding in every possible way the public health. England, enjoying as she does trade with every part of the known world, is from this very fact exposed at all times, though with varying intensity, to the danger of the importation of epidemic disease. The history of quarantine in this country is that of a long and fierce struggle between these two great interests, which for many generations have been deemed to be more or less in conflict, but which the advancement of science and the development of rational principles have eventually brought into harmony and accord. It can be shown that the antagonism of these interests is more apparent than real, and it has happily been demonstrated that the utmost freedom of the trade of the country can be best promoted by the very means adopted for the preservation of the public health. It has frequently been asserted that quarantine is essentially a modern institution and that only within the last four hundred years has the system been actually in force. Thus thirty-five years ago a writer on quarantine says: "Quarantine has no ancient origin. In vain do we consult any of the writers of ancient or even middle ages for any traces of this system. In ancient times there were no bills of health or passports. The traveller passed from country to country unquestioned. There were at this time no officers of health or policemen. In the best days of Greece and Rome there were no lazarets, nor imprisonment of sick or healthy. The Mediterranean was indeed an open sea, and persons enjoyed free communication thereon. So recently as the fifteenth century was the first interruption to this state of affairs.'[2] This, however, is scarcely an accurate statement of the facts. In an elementary and crude form health precautions were taken long before this period, though obviously in the days when commerce (especially at sea) was in its infancy such measures were but imperfect, and necessarily attracted but little attention. Further, it is clear that so long as epidemics were deemed to be direct visitations of the Almighty as a punishment for some national offence, and the influence of communication by human agency was not recognised, it was not to be expected that any complete system should be in vogue for attempting to arrest the spread of disease. In connexion with quarantine it is not possible to overlook the directions given by the ancient lawgiver Moses, by which the Israelites became possessed of a code of sanitary law which, when divested of the ritual with which it was clothed, remains to this day as inculcating an example of a standard of sanitation which has scarcely been excelled by any nation, and certainly not yet reached by many who boast themselves of their civilisation. While there has been much discussion as to the nature of the disease referred to as leprosy in Leviticus xiii. and xiv., the position of the priest was clear. Acting with direct Divine authority, his duty was to examine each suspected case and decide as to whether the patient was suffering from the true disease or not. If the diagnosis was certain, then the sick man was declared unclean and was compulsorily isolated: "he is unclean, he shall dwell alone, without the camp shall his habitation be" If there was any doubt as to the nature of the disease, the patient was isolated for a period of seven days, at the end of which time he was again examined, and the period of seclusion was again and again repeated until the priest was able to definitely pronounce him clean or unclean. Again, in verses 47 to 59 instructions are given as to the purification of infected clothing; while in chapter xiv., verses 33 to 48, are laid down detailed regulations as to the cleansing, &c., of infected houses and clothing.

Except from the fact that under the Levitical law the priest acted with Divine authority, he fulfilled exactly the same duties and functions as the medical officer of health and sanitary inspector of our own days, and it is universally conceded that to the complete sanitary code under which they lived is due to a great extent the marvellous power of resistance to disease that has at all times characterised this remarkable nation.

In considering the question of quarantine it is important to exactly define the term, inasmuch as the word has been applied indiscriminately to many different systems of dealing with the prevention and control of infection. Thus it has even been applied to the period during which isolation is considered necessary after recovery from an infectious disease such as small-pox or scarlet fever. Limiting the word to measures designed to prevent the importation of disease into a country by means of maritime commerce, it may be defined as "the enforced detention and segregation of vessels arriving in a port, together with all persons and things on board, believed to be infected with the poison of certain epidemic diseases, for specified periods." At first such periods were purely arbitrary and bore no reference to the possible incubation period of the diseases against which they were directed.

The question of infection was but imperfectly realised, and beyond the general vague idea that a person coming from an infected place might in some way or other convey the pestilence, there were no definite opinions or theories on which to base any uniformity of practice as regards the period of segregation. Later, with the advancement of medical science,

[1] Lectures II. and III. will be delivered on March 16th and 18th respectively.

[2] British and Foreign Medical and Chirurgical Journal.

there was some attempt in a crude way to make the detention correspond with the supposed duration of incubation or latency of the poison. The essential point of quarantine, from its earliest inception up to its fully developed existence at the present day, is that it estimates the danger, and thereupon the precautions to be taken according to the state of health of the port whence the vessel has arrived, and has no reference to the condition as regards health or sickness of the vessel and its inhabitants. Though quarantine has been employed as a protection against many diseases, originally it was against the danger of plague only that it was directed. The whole theory of the system obviously rests on a belief in contagion. As soon as this was even suspected the natural sequence was to isolate those coming from suspected places as a means of protecting the general public. Dr. Granville, writing in 1819, states that the idea of segregation as a means of preservation can be traced to a much earlier epoch than the Crusades, for it is found explicitly mentioned in the Acts and Edicts of the Eastern Emperors during the sixth century. These, issued to prevent the importation of plague, ordained that those persons who came from an infected country should repair to a particular spot and remain there under observation for forty days, in order to ascertain whether they carried with them the seeds of the disorder. The first known law for the seclusion of persons from infected districts for a probationary period was enacted under the Emperor Justinian in 542. The earliest definite regulations against the spread of disease are those contained in letters sent by Duke Bernados to the prefects in 1374, when plague was devastating Lombardy, in which it was ordered that any person who should be attacked with any disease should forthwith leave the city or camp in which he was at the time and go into the fields or the woods until he either died or was set free, and further, following exactly the idea of the Jewish Levites, the priests of the parish churches were ordered under severe penalties to examine the sick and report the nature of their sickness to certain officers appointed for the purpose. Those who attended on the sick were ordered to remain isolated for at least ten days after the death of a patient before they held any communication with other persons. None but those appointed for the duty were to be allowed to attend upon the sick under penalty of confiscation of goods and life. In 1383, when the plague again invaded Lombardy, Bernados ordered that no person should be allowed to enter his kingdom from any infected place under the penalty of the yoke (*Sub pœna furcarum*); while in 1399 John Galeaz, Duke of Milan, for the same reason had guards placed at the gates of the city with instructions to prevent anyone entering who had come from a plague-stricken district. It was at the same time enacted that no house in which a case of plague had occurred should be again inhabited until it had been purified by fire and freely opened up for eight or ten days. These, however, were but solitary instances of precautionary measures. While trade was small and confined within certain narrow limits the danger from infection, scarcely yet believed in, called for no extraordinary measure of defence. Soon commenced the great movement of the Crusades. Originally inspired with the idea of preserving the Holy Land from the attacks of its enemies and of avenging the insults offered to Christianity, this movement rapidly grew and as rapidly degenerated, until the first great motive was almost entirely lost sight of in the unbounded opportunities it afforded for adventure, licence, and cupidity. In the first Crusade it was computed that nearly one million persons followed the standard of the Cross in its triumphant advance from Nice to Antioch, Edessa, and Jerusalem. But whatever the motive of those following the Crusades, and however sordid the reasons which guided them, one great result was the inevitable opening up of trade with the East. At the time the new disease—the plague—was attracting much attention, and it was naturally noticed that where plague was prevalent those who had kept aloof from the victims were by this fact to a certain extent protected therefrom. This isolation was at the best but partial, but its influence was observed, and its efficacy seen to be in proportion to its strictness. This gradually led to the idea that by preventing intercourse with infected places the importation of the pest might be entirely avoided. "Thus something in the shape of quarantine establishments began to be formed, not only to prevent intercourse with plague spots, but also to prevent free intercourse for some time after it was said to have subsided."[3] By continued experience of these facts, added to from time to time, developed the laws of quarantine, at first very imperfect and very varied in their form and restriction in various States, but all alike having their origin and bases in the one fundamental idea—viz., the doctrine of communication of disease by means of contagion. According to Boccaccio[4] Florence had adopted measures for its preservation from imported disease in 1384. To the Venetians, however, must be given credit for the first complete code of quarantine regulations. As early as the year 1150 they were said to have obtained from the Pope special sanction to enter into trade with the infidels of Alexandria and Aleppo and, according to Belou, had their own consul at the latter port before the middle of the fifteenth century. They were undoubtedly then and for a long time the only traders with Turkey. Venice was at that time the great centre of trade with the East, and its inhabitants were, therefore, more exposed to the importation of disease than those of any other State. According to Baker[5] it is probable that their first regulations were issued as early as 1127, but in 1448 a complete code was issued which served as a model for all others up to a very recent period. This code laid down as a principle that plague (against the introduction of which the law was established) "was a contagious disease capable of engendering a contagious matter, capable of adhering to certain inanimate substances, of being retained by them for an almost indefinite time without losing its activity, and, on the other hand, incapable of attracting itself to other inanimate substances and which might consequently be handled with absolute impunity and security. All merchants and persons coming from the Levant were compelled to remain in the house of St. Lazarus for a period of forty days before admission into the city. Thence is derived the term lazaret in use at the present day. There has always been some considerable doubt as to the origin of the period of forty days which gave rise to the name of the system. It seems probable that it was derived from the Jewish ceremonial, and was continued under various systems and laws until it became a settled period, the origin of which was lost, and the only justification for which was its antiquity. It ofttimes happens that a custom arising from some vague theory or speculation (which resting upon no sound basis is soon lost sight of) becomes after a lapse of time unassailable on account of its antiquity, and comes to be eventually considered as the result of the experience of ages, and as such venerated and preserved." The merchants settled in Turkey appeared to have formulated certain definite precautions against the plague, and our own merchants, who were not established in that country until close on the sixteenth century, doubtless influenced by their predecessors, at once began to adopt similar protective measures. These, however, were optional on their part and were not required by the law of the land. Bills of health were instituted by the Turkish Company for their own ships, for an English traveller at Aleppo mentions his having "a clean bill" (Moryson's Travels), and the English merchants at Aleppo established the same system as early as 1600.

In England in 1603 an Act for the relief and ordering of persons affected with plague was certainly passed, but this provided only for the isolation of persons in the country, and contained no provisions as to maritime quarantine. In the year 1636 the question was referred to the College of Physicians and certain "Directions" were issued by them. The second article stated: "It is likewise necessary that there be care taken that neither man nor goods may come from any suspected places without a certificate of health or else either to be sent suddenly away or to be put to the pest-house (or such like place) for forty days *according to the custom of Italy*." When these articles were re-published in 1665 the title of the second was changed from "Men and Goods from Infected Places" to "Prevention of Propagating the Infection from Place to Place," and reads: "As to the provisions already made by authority upon occasions of prohibiting persons and goods coming from infected places." From this may be inferred that quarantine having been at that time definitely established, it was no longer necessary to recommend its imposition.

The first commercial treaty between the Ottoman Empire and any European Power was that concluded in 1535 by Francis I. and Solyman the Magnificent. Venice followed

[3] Dr. White: Treatise on Plague. London, 1846.
[4] Decameron. Amsterdam, 1679.
[5] Nautical Magazine, 1896, p. 992.

in 1580, and England a little later. In 1664, owing to the action of the Crown in destroying the monopoly of the Levant Company and throwing the trade open to all, the regulations became more stringent. These regulations required: (1) That no vessel should leave any port of Turkey or Egypt without a bill of health; (2) that all enumerated goods brought from Constantinople to Smyrna for Great Britain should, if there were any sickness at Constantinople, be landed and aired for twenty-one days; (3) that no goods from Cairo should be shipped at Alexandria when there was sickness there unless landed and aired for twenty-one days; (4) that no bill of health should be given until the expiration of forty days from even a single case of plague; and (5) that if the contagious sickness should appear on board any vessel in a Turkish or Egyptian port she should not be allowed to leave unless her cargo was landed and aired for at least forty days. It is especially noticeable that even at this early period the Levant Company took the precaution of inquiring into the health of the vessel at the port of departure. No provisions, however, were made for dealing with infected persons or for the disinfection of the vessel. As Sir James Parker says in his "Observations": "When we are certain as to the health of the crew of a ship we may make ourselves easy with regard to any fears which may arise from the merchandise" (p. 44), and that "the length of the voyage is a security against the importation of disease by persons" (p. 444). Before the Quarantine Act of 1754 a vessel from Turkey with a clean bill of health could land her passengers at any port, each one having his own individual patent. Dr. Pringle, in "Rational Inquiry," says: "Turkey being seldom free from plague, our trade there being increased so considerably within the last fifty years, it would be impossible for us to escape it (who have never made use of the Italian custom) if goods were sufficient to communicate it."

The first quarantine Act in England was passed in the ninth year of the reign of Queen Anne. Up to this period all quarantine regulations were issued by the King in Council without the intervention of Parliament. This is clearly shown in the preamble of the Act. This Act, like nearly all the subsequent ones, was passed under the influence of panic, the plague then raging in the Baltic. The Bill received Royal Assent eight days after it had been introduced into the Lower House, and came into force two days later. As an instance of the result of such hasty legislation it is to be noted that the power to open and air cargo (in which so much confidence was placed) was accidentally omitted, and only added by a special rider the day before the Royal Assent. Upon another alarm of plague at Marseilles in 1720 a second quarantine Act was passed in the same hasty manner; ordered to be drawn in December, it was read for the first time on Jan. 18th, and received Royal Assent on the 25th of the same month. The title was—"An Act for Repealing an Act and for the better preventing of plague being brought from foreign parts into Great Britain or Ireland, the isles of Guernsey, &c., and to hinder the spreading of infection." This Act was to continue in force for three years only. The outbreak of plague at Marseilles was the occasion for the passing of two Acts in the following session—the one "to enable His Majesty effectually to prohibit commerce for the space of twelve months with any country that is or shall be infected with plague," and the other "to prevent the clandestine running of goods and the danger of infection thereby and to prevent ships breaking their quarantine." The first received Royal Assent in February, 1721, and the second in March of the same year. All these three Acts of George I., being temporary, expired, whereupon the Act of Queen Anne again came into force. In the first year of the reign of George II. another Act, nearly word for word with that of George I., was passed. The power of prohibiting intercourse with any country for twelve months was again inserted, and also the power of preventing anyone coming from an infected place under a penalty of £500. The importer of prohibited goods was to forfeit double their value in addition to loss of ships and goods. Among the chief clauses of former Acts repealed was one empowering His Majesty in Council to make orders for the regulation of quarantine and another giving the power when plague existed in any foreign country to order vessels coming from infected places, or laden with goods from such places, or having on board any infected persons, to be burnt together with the whole or any part of the cargo. The order for opening and airing *after the quarantining of ships and crew* was continued. This Act, again, was only temporary and expired in 1731. In consequence, however, of the appearance of plague abroad it was revived in 1733 for a further period of two years. On its expiry in 1735 and until 1753 the Act of Queen Anne was once more the quarantine Act of the land. During the outbreak of plague in 1743 in the absence of the King the Lords of the Regency ordered all vessels from the Mediterranean to perform quarantine in Stangate Creek. In 1752 Parliament once more dealt seriously with the question, and two quarantine Acts were passed in the following year and came into force twelve months later. This was the first time that the Legislature had approached the subject deliberately and without the fear of an epidemic hanging over them, and as a consequence the Acts passed were far more thorough and complete. In the 26th Chapter George II. the 12th clause enacted: "That no goods nor merchandise liable to retain the infection of the plague and coming from the Levant without a clean bill of health shall be landed in Great Britain until it shall appear to the satisfaction of His Majesty that the same goods or merchandise have been sufficiently opened and aired at the lazarets of Malta, Ancona, Venice, Messina, Leghorn, Genoa, Marseilles, or one of them." The principal new provisions were as follows:—1. All vessels with plague being to the northward of Cape Finisterre were to proceed to New Grimsby (afterwards changed to St. Helens). 2. The master of a vessel performing quarantine was to deliver to the appointed officers a bill of health, consular manifest, log book, and journal under a penalty of £50. 3. The powers as to dealing with individuals were still very vaguely expressed: "They shall be subject to such orders as they receive from proper officers." 4. The omission of the words, "All ships coming from infected places or from any place known to trade with any place actually infected," and the substitution therefor of the words, "All ships, persons, and goods coming from places whence His Majesty in Council may deem it possible that infection may be brought." 5. The order for airing goods after quarantining of ships and crew was no longer specified. Up to this period all detention in quarantine had been carried out on board ship, but in 1752, the House having decided "that the present system of quarantine by airing goods on hoys and vessels is not well calculated to prevent infection, and is inconvenient and expensive to the merchant," further agreed, "that for the better and more effectual performance of quarantine a lazaret should be erected," and after considerable discussion Chedney-hill was selected as a suitable spot. Nothing, however, was done at the time, and twelve years passed without action, when, doubts having risen as to the sufficiency of the powers granted, a short Act was passed confirming the previous proceedings and voting the sum of £5000 to proceed with the work. This was the first step towards the provision of a lazaret in England, which, curiously enough, was never carried to completion, for after large sums had been expended on the scheme it was eventually discovered that the position was unsuitable. It was therefore abandoned and the materials sold. In spite, however, of the care bestowed upon the quarantine Act it was still from an administrative point of view very unsatisfactory. In all cases the details were left to the Privy Council, a body which had neither the time nor the means to attend to them properly. As an instance of this in 1770—i.e., twenty-seven years after passing the Act—an Order was issued that vessels from Dantzig or Pomerania were, when coming to the Thames or Medway, to perform quarantine for forty days in Stangate Creek, but if proceeding to any other port the officers of Customs were to appoint proper quarantine ground, from which it is clear that the Council had not already made such arrangements. This was, however, still more evident in 1790, when, on account of the prevalence of plague in Russia, seven stations were named in an Order of Council then issued. Again, in July, 1783, plague being prevalent in Poland, vessels coming thence were ordered to perform quarantine for forty days. The Privy Council had not considered the possibility of some of these vessels being laden with grain, which is not mentioned in the quarantine Act; and within a few days Edinburgh, being threatened with famine, presented a memorial showing the oversight and the serious consequences that might arise therefrom. A second Order was, therefore, hastily issued to permit all vessels laden solely with grain to discharge without any quarantine or airing of their cargoes, providing that the master made an oath that the crew were free from infection

and that the vessel had not communicated with any vessel from an infected place. In 1805 another Act was passed which, while in no way interfering with the existing system of quarantine, materially modified the charges which had been so serious a burden to the commerce of the country. A report of the Select Committee on the foreign trade of the country in 1824 gives some startling figures as to the burdensome character of these charges. It states that the quarantine charges in the case of a vessel with a clean bill of health amounted to 7*s.* 6*d.* per ton, and with a foul bill of health to no less than 15*s.* per ton register, 1*s.* extra being paid in London. Further, that these charges were levied upon the gross tonnage of the vessel, whether she carried a full cargo or not. The report goes on to say that, apart from the serious delay, in many cases the quarantine charges amounted to 35 per cent. of the value of the cargo, and one instance is given in which they exceeded 90 per cent., although there had been no sickness on board the vessel. The last quarantine Act of this country was the 6th George IV., cap. 78, which repealed all former regulations, and enacted that all vessels arriving from any places whence His Majesty by the advice of his Privy Council shall have declared it probable that the plague or other infectious disease or distemper highly dangerous to the health of His Majesty's subjects may be brought, and all persons and goods, shall be liable to quarantine. That all vessels from the continent of America or the West Indies (when yellow fever prevails there) shall come to anchor at certain appointed places in the port for the purpose of having the health of the crew ascertained. The opening and airing of such goods as were considered susceptible were still insisted on. By the 39 and 40 Vict., cap. 36, the powers of the Privy Council were ordered to be carried out by Her Majesty's Commissioners of Customs, and this continued until the repeal of the Quarantine Act by the Public Health Act, 1896. Long before this, however, the enormously increased importance of our foreign trade and the obvious futility of the strict enforcement of quarantine had excited the attention of thinking men. Dr. McLean was one of the principal movers in this direction, and his able statement of opinion led the House of Commons in 1817 to refer the matter to a Select Committee. This committee examined twenty medical witnesses, the majority of whom, however, were stated to have had no experience of the disease, and their report stated that all these gentlemen, with the exception of two, were in favour of the received opinion that the plague is communicable by contact only, and differs in this respect from epidemic fever. In this opinion the committee acquiesced, and added that they saw no reason to question the validity of the principles upon which such (quarantine) regulations appeared to have been adopted. This report is the more unsatisfactory inasmuch as the College of Physicians, when consulted by the Government in the previous year, had given their opinion in a much more guarded form as follows: "That although some epidemic diseases are not propagated by contagion, it is by no means proved that the plague is not contagious or that the regulations of plague police are useless or pernicious." "The doctrine of contagion appears to us to be wholly unshaken by any argument which Dr. McLean has adduced; at the same time we think it probable that some of the personal restrictions enforced in quarantine establishments might be modified without injury to the public health." Clearly showing that they recognised the unnecessary restrictions of the system as then carried out. Within a few years Sir Wm. Pym (the superintendent of quarantine) recommended considerable relaxation of quarantine, giving as his reason that he had never known a single instance of a case of plague occurring in a vessel from the Levant, and his belief that, with due regard to ventilation, infection would not spread. The only reasonable way of judging as to the actual value of the system was clearly to collect the experience of other European countries as well as our own. Progress in this direction was slow, for twenty years had elapsed before Sir Wm. Pym could say: "That there was no evidence to show that a single case of plague had ever been known to occur in any country from the manipulation of suspected or infected merchandise landed in lazarets." The records of lazarets also proved that the disease seldom or never spread from even the sick to any other of the inmates or to any of the officials of the establishment. As has been previously mentioned, up to the beginning of the present century quarantine had been directed against plague only. Yellow fever was at that time scarcely thought of, and cholera was not recognised as a danger to Europe. The experience of 1831–32 of quarantine as a protection against cholera was most unfavourable, and so clearly was this recognised that on the second visitation, in 1847, it was not relied upon. Nor was it at all evident that this country suffered in consequence or was more seriously affected than other European nations, which still kept up their rigorous system in spite of its obvious failure to protect them in their previous unsuccessful attempts to exclude the disease. A proposal for a general congress of delegates from States having ports on the Mediterranean had been made by the French Government in 1838, but fell through owing to various difficulties which arose. In the same year a proposal was made to send competent medical men to visit the chief European ports and collect information on the subject. Instead of this, however, Sir William Pym suggested that certain questions should be submitted to the consuls of Constantinople, Smyrna, Aleppo, Alexandria, Cairo, Odessa, and Malta asking for replies thereto. These questions were as follows: 1. Is plague communicated by contagion? 2. Is it communicated by contagion alone or by other means; if so, by what means? 3. Is actual contact with an infectious person necessary for communicating plague, or will a close approach to such a person communicate the disease? 4. Can substances which have been in contact with an infected person communicate the plague, and if so, what substances? 5. How long will the contagious matter of plague remain dormant in an infected person before it declares itself by evident symptoms? 6. How long will the contagious matter of plague when lodged in inanimate substances retain its infecting power? 7. What are the means by which substances containing contagious matter of plague can be purified?

A despatch of Lord Palmerston in 1839 to the English Ambassador in Constantinople on certain harsh measures enacted in Turkey is worthy of quotation as showing that the medical knowledge of the Government of the day was far in advance of its actual practice. "With reference to the proposed regulations, I have to instruct your Excellency to endeavour to strongly impress upon the Turkish Government that they would more effectually prevent the spreading of the plague by introducing cleanliness and ventilation into the city and suburbs of Constantinople than by such violent disturbance as is proposed with the domestic arrangement of families. It is quite certain that the plague is much aggravated, if not actually generated, by the want of cleanliness in streets, by the want of sufficient ventilation in houses, and by the want of proper drainage in places contiguous to habitations; and if the Turkish Government would in the first place apply vigorous measures to correct these evils they would strike at once to the causes of the disease, whereas the measures which they have now in contemplation will only be productive of inconvenience and suffering to numerous individuals."

A further attempt by the British Government to bring about a general conference in 1843 failed owing to the view of Austria that such conferences would be premature until exact information had been obtained from a committee of medical authorities appointed by each State to report as to (1) the maximum and minimum terms of quarantine for persons, (2) terms of quarantine necessary for goods and merchandise, and (3) the best measures for disinfection of objects susceptible of contagion.

Towards the close of 1844 a Commission was appointed by the Royal Academy of Medicine of France to report upon the whole subject. After a deliberation of more than twelve months they presented a most exhaustive report. Their general conclusions were that plague had arisen spontaneously in Egypt, Syria, Turkey, and in other countries, but could always be reasonably attributed to certain determinate conditions, the chief of which are residence upon marshy soil in low, crowded, badly ventilated dwellings, especially in a warm, moist climate and atmosphere, exposed to the actions of putrescent animal and vegetable matter, unwholesome and insufficient food, and great physical and moral wretchedness.[6] The characteristic features of epidemic diseases are:—1. They generally manifest in their progress three distinct periods of commencement, persistence, and decline, often displaying neither the

[6] M. Hamont states that Egypt before it came under Ottoman rule was a rich and prosperous country, and calculates that at one time its population must have been nearly one hundred millions, while in 1846 it was estimated at one and a half millions only. At the same time its social and physical condition has deteriorated at the same rate.

same symptoms, lesions, nor gravity during these periods. 2. During the prevalence of an epidemic other diseases are less prevalent, and they receive the stamp of the epidemic. 3. During an epidemic even persons in good health feel its morbific effects more or less. 4. Epidemics not unfrequently return and cease at the same season, and have usually the same duration. 5. An epidemic is often preceded by some other affection as a precursor. The Commission was of opinion that plague was not to any extent transmissible beyond or away from epidemic foci, for the following reasons. When an epidemic is dying out all, or nearly all, the sick recover and no new cases recur. There are still cases in hospital, all the conditions favourable to spread exist, and yet none takes place, and even an infected person coming from an epidemic focus is then to be feared no more than a sporadic case. If it is doubtful whether goods or clothing can convey plague during an epidemic, it is certain that they cannot after it has died away. They decided that the period of incubation was, as a general rule, from three to five days, and finally advised:—1. That for vessels having a medical officer on board from Egypt, Syria, or Turkey, with a clean bill of health the period of quarantine should be a full ten days calculating from the date of departure, provided that no case had occurred on board. That with a foul bill this period should be fifteen days for a healthy vessel. 2. For merchant vessels without a medical man the same period should be imposed, but that it should in all cases date from the time of arrival. The report itself is exceedingly valuable and instructive, but its conclusions do not in any way justify the severity of the practical recommendations.

In October 1844, Sir Wm. Pym, having visited all the principal Mediterranean ports, was of opinion that the periods of quarantine both for persons and vessels might be considerably reduced and in some cases altogether abolished, especially in the case of vessels from the Black Sea and those which had crossed the Atlantic. During the Crimean War an interesting experiment was made as to the value of quarantine as a safeguard against cholera. Owing to the exigencies of international warfare the whole system of quarantine throughout the Mediterranean and Baltic was practically suspended. Although cholera existed on the Continent, it was seen that many places freely exposed to risk of infection from the arrival of infected vessels and the landing of sick persons suffered less than on former occasions. This was notably the case with Malta and Gibraltar.

In 1865 was published the eighth report of the Medical Officer of the Privy Council. The remarks therein made by Sir (then Mr.) John Simon, marking by their clearness, power, and scientific accuracy a distinct epoch in the position of this country, remain and will remain as a record of his acumen and farsightedness in this as in many other directions. He says: "The precautions generally which may be taken against contagious disease are of two kinds—first, if possible, to prevent the entrance of the contagion; secondly, if the contagion be present, to annihilate as far as possible the circumstances which favour its spread. Thus, as regards cholera, a first, an incalculably important, question to be answered by those who have to care for the public health of a country is the question whether by any measures of quarantine they can provide that all contagion of the disease shall be kept outside the limits of the land. Subject to one qualification, which is not an important one for the present argument, it may, I think, be accepted as certain that quarantine conducted with extreme rigour and with the precision of a chemical experiment will keep cholera out of every part of Europe in which the extremely difficult conditions can be absolutely fulfilled; and thus, if I speak to the dry question of medical practice, I have no hesitation in saying that England ought to resist cholera by quarantine. On the other hand, though I cannot pretend to discuss with any kind of authority the non-medical aspects of the question, it would be mere pedantry for me to ignore that facts which are of common notoriety and considerations which are of common sense conflict with that medical conclusion. A quarantine which is ineffective is a mere irrational derangement of commerce, and a quarantine of the kind which ensures success is more easily imagined than realised. Only in proportion as a community lives apart from the great highways and emporia of commerce or is ready and able to treat its commerce as a subordinate political interest—only in such proportion can quarantine be made effectual for protecting it. In proportion as these circumstances are reversed it becomes impossible to reduce to practice the paper plausibilities of quarantine. The conditions which have to be fulfilled are conditions of national seclusion, and fulfilment of such conditions by England would involve fundamental changes in the most established habits of the country. In order to illustrate this view the medical postulates of quarantine, purporting to be effectual, cannot rest satisfied with excluding from entry such persons as are obviously sick, but, indispensably for its purpose, must always refuse to admit the healthy till they shall have passed in perfectly non-infectious circumstances at least as many days of isolation as the disease can have days of incubation or latency; this condition often involving as its consequence that if one case of disease arise among a number of persons in quarantine the whole number of apparently healthy must re-commence their period of probation, and this perhaps again and again. Now, setting aside as not essential to quarantine the cruelties which its mal-administration involves, and which in practice are almost identical with its exercise; criticising only the conditions which quarantine, if it is to be effective, must involve; and for the moment not even counting as an objection the cost of that gigantic establishment which has to be permanently maintained in order to meet occasional exigencies, I here insist only upon the restrictions. Considering what they, when carried into effect, must involve—what inconvenience to persons, what interruptions to commerce, and on how vast a scale and for what indefinite duration—no one can expect, in regard of great trading communities, that Governments, if they go so far as to enact, will have much success in enforcing quarantine. Against the efficiency of it when enacted there operate some of the strongest law-breaking influences—on the one hand instincts of contempt for the narrow self-protectiveness which it represents, and on the other those eager commercial instincts which now mainly govern the world. Contraband of quarantine, like ordinary smuggling, is developed as soon as the inducements for it are considerable. And thus, practically speaking, where great commercial countries are concerned it can scarcely be dreamt that quarantine restrictions will be anything better than elaborate illustrations of leakiness. In respect of England, moreover, there are other facts to be stated. In 1832-33, when some sort of quarantine against cholera was adopted here, the results gave no encouragement to repetition. Then followed the erroneous belief (which subsequent better knowledge has corrected) that the spread of cholera is unaffected by human intercourse. Under these and other influences the thought of quarantine in England became more and more obsolete, and the possibility of enforcing it, if ever so much desired, fell more and more towards nothingness. Probably there was the practical conviction that against any contagious disease on the continent of Europe quarantine of the utmost strictness which England could hope to attain would not give results worth the sacrifice. I dare say that quarantine in England was never otherwise than very lax, and at all events it has for many years past in every medical sense been abolished. Further, with its virtual extinction the establishment for giving it effect has declined. As successive Governments advanced further and further in relinquishing what probably at its best was only a sham of quarantine corresponding reductions of establishments were made. And the result of the entire progress may be told in these very few words—that at the present moment England has not in readiness the means of properly quarantining a single vessel. It is not for me to say that this state of things may be deemed final. But if reversal of that policy which it expresses were ever so much desired it could not be effected offhand. Enormous first expenditure of money in creation of proper lazarets would be wanted as well as subsequent very large annual outlays for maintaining the necessary establishments. And the time which would be required for bringing the organism into work forbids the supposition that this could ever be done on emergency. So far in England, under present circumstances, quarantine against cholera, as existing in the countries which are nearest to us is a precaution of which there can be no serious thought. Were the country ever so ready to endure those extreme restrictions, without which the whole thing is fruitless and absurd, the means for imposing them do not exist. To extemporise a cordon sanitaire is simply and totally impossible, and no partial quarantine can be relied upon for national purposes. Not only as regards cholera, but generally as regards all contagious diseases, the position

which now has to be recognised and dealt with is that contagion current on the continent of Europe must be deemed virtually current in England."[7]

This clearly represented the position of the country at that time with reference to quarantine as a means of defence, and from this position there has since been no reason to recede. But quarantine was not yet got rid of. Originally established to prevent the importation of disease, when this object was shown to be futile the system was still retained in order to prevent interruption to trade. It was clear that while other countries kept up the practice any official abandonment would only lead to an indiscriminate quarantining of British vessels. That this was no imaginary danger has been shown on many occasions. In 1853 the countries where quarantine was most rigorously carried out were Spain, Portugal, Greece, and Sweden. As soon as cholera appeared in this country Spain called upon Gibraltar to impose quarantine upon all arrivals from our ports, and on account of some delay all communication with the mainland was at once cut off except such as was carried on by smugglers, and in self-defence the authorities were compelled to yield. This same pressure during the present year has caused Gibraltar to impose quarantine upon vessels from Indian ports. Any hesitation to comply would have invited a complete cessation of the important defence works in course of construction there. Again, in 1825, when some vessels with foul bills of health were admitted to pratique by order of the Government, the whole United Kingdom was put in quarantine by the Mediterranean Powers and every arrival from Great Britain subjected to a lengthy detention. And, to quote one more recent instance, the *Helene*, a small German vessel, which arrived in London in August, 1893, with two cases of cholera on board, was refused pratique at a South American port nine months later, the reason assigned being that she had not yet undergone quarantine, having been only subjected to disinfection in this country.

At the close of the cholera epidemic in 1851, on the invitation of the French Government, delegates once more attended at Paris from France, Great Britain, Austria, Russia, Turkey, Greece, Spain, Portugal, and some other Powers to consider the question. They decided that henceforth only two degrees of quarantine should be recognised—viz., quarantine of observation and quarantine of rigour, the quarantine of suspicion being abolished. That only two forms of bills of health should be allowed—viz., clean and foul, and that these should be granted after the health of the port of departure had been thoroughly ascertained and not on conjecture, as heretofore. That the measures taken should apply equally to the vessel, crew, and passengers in consequence of the health of the port of departure, and that no regard should be paid to the condition of the health or sickness during the voyage in determining the nature of the quarantine which was to be directed against the infected country generally. The diseases against which quarantine was to be employed were reduced to three—viz., cholera, yellow fever, and plague. It is worthy of note that Austria opposed the inclusion of cholera on the ground that she had tested quarantine against it in 1831 and found it not only useless but dangerous. England, France, and Sardinia alone opposed quarantine entirely and stated that they had retained it only in consequence of the position of other European Powers. Spain and Portugal, while admitting that the utmost protection could be afforded by measures of general sanitation, held that till these have been universally carried out reliance must be placed upon compulsory segregation. The final decision, carried only by five votes, was that all arrivals from a cholera-infected port should be liable to five days' full quarantine, the voyage being included, but that if any case had occurred on the voyage the detention should date from the time of the arrival. That it was not necessary to land cargoes, but that free ventilation on board was sufficient. Power, however, was to be given to any State to impose a shorter quarantine than three days on vessels coming from a port which, though still healthy, was in close proximity to or in communication with one already declared infected. For yellow fever the minimum detention was fixed at from five to seven days, and the maximum at from seven to fifteen days. If the voyage exceeded thirty days, if there were no sickness on board during the voyage, and if the vessel was in good sanitary condition on arrival, this term might be reduced to three days. If the voyage were of more than ten days' duration and no sickness had occurred on board, simple aeration would suffice for the cargo. But if the voyage was shorter than ten days, or if there had been any case on board, then the cargo might be required to be landed and disinfected. As against plague the minimum detention was fixed at ten days, and the maximum at fifteen, and this could only be performed at such ports as were duly provided with lazarets and appliances for landing and disinfecting persons and cargo. Disinfection was to be required for all highly and moderately susceptible goods. Further to increase the value of the bills of health it was decided that a clean bill should not be granted until the expiry of a specified period after the certified cessation of disease in a port. This period was fixed at ten days for cholera, thirty days for yellow fever, and thirty for plague. Although quarantine proper was to be limited to these three diseases, still a local authority was to be allowed to impose a mitigated quarantine in the case of a vessel on board of which typhus fever or small-pox actually existed at the time of arrival.

To mark the Conference's view of the importance of the sanitary condition of vessels it was decided that foul or filthy ships should be treated as though they carried foul bills. Unfortunately, however, no corresponding privileges were given to those vessels which arrived in good sanitary condition. A Convention drawn upon the lines of the decision of the Conference was agreed to by France, Sardinia, Portugal, Tuscany, and Turkey. England naturally declined to accept these terms on account of the severe and unnecessary restrictions. It is a somewhat significant fact that in more than one of the countries agreeing to this convention regulations became thereafter more rigorous than before.

Thus, although the deliberations of the Conference lasted for more than three months, the total result was unsatisfactory in the extreme. It had begun to be understood in this country that whatever advantages were supposed to be gained by quarantine could be more effectually obtained by other and more reasonable methods. In 1848, when the old system was discontinued upon the recommendation of Dr. Southwood Smith, it was explained that in the place of the rigorous detention of vessels from infected ports with their crews and passengers for a lengthy period a system of strict sanitary supervision of the vessels themselves and of all persons on board by a medical officer should be substituted. The Social Science Quarantine Committee in 1861, after having submitted a long list of questions to Her Majesty's Customs and others, from the information thus obtained formulated a most valuable report which was published by the Board of Trade. After stating that the object was to amend and utilise, not to destroy, the existing machinery, they reported that while the practice of quarantine varied in different ports there were great difficulties in obtaining information on account of the lack of systematic and accurate reports on the subject; that bills of health were drawn up in different forms and from various sources of information, often erroneous and affording no real guarantee as to the health of the country; that even in strict quarantine countries the regulations were of necessity relaxed at certain times—notably in case of war or the arrival of particular vessels; that lazarets and other arrangements were not adapted for their purpose, causing not only discomfort but even actual injury to persons detained in them; that the division of cargoes into classes of susceptible and non-susceptible, &c., was utterly valueless, and that, moreover, the spread of disease from a cargo was practically unknown; that those countries which were most rigorous in the enforcement of quarantine were no more exempt from epidemic diseases than those which adopted more lenient and simple precautions; that stringency was apt to defeat its object by leading to concealment; and that the sanitary arrangements of ships and ports were, generally speaking, exceedingly faulty. They therefore recommended: — 1. That under ordinary circumstances vessels which have had no sickness during the voyage and are in good sanitary condition on arrival should be admitted to free pratique without regard to the health of the port of departure. 2. When any detention of a vessel is necessary, either from the fact of sickness existing or on account of the foul or unwholesome condition of the vessel, a careful examination should be made of her and of all the persons on board by the quarantine medical officer, who should have the power to adopt, and should be charged with the responsibility of adopting, such measures as each case demands. The

[7] Report of the Medical Officer of the Privy Council, p. 40.

healthy should not be detained, and the sick should be removed to hospital as speedily as possible. Where small-pox exists on board a ship all unprotected persons should be vaccinated. 3. Vessels from abroad should be required to pump out their bilge water and clean their bilges before entering harbour, and the hold should be aired so far as possible before arrival. 4. Before a bill of health is given an examination should be made as to the sanitary condition of the vessel and the health of the crew, and the results of such examination noted on such document. 5. Medical quarantine officers should be required to keep accurate records of all matters relating to quarantine, and to prepare an annual report thereon.

The Erasmus Wilson Lectures

ON

THE PATHOLOGY OF THE LYMPHADENOID STRUCTURES.[1]

Delivered at the Royal College of Surgeons of England on March 1st, 3rd, and 5th, 1897,

BY W. G. SPENCER, M.S., M.B. LOND., F.R.C.S. ENG.,

SURGEON TO OUT-PATIENTS AND THROAT DEPARTMENT, WESTMINSTER HOSPITAL, AND LECTURER ON PHYSIOLOGY AT WESTMINSTER HOSPITAL MEDICAL SCHOOL.

LECTURE II.[2]

Delivered on March 3rd.

THE THYMUS.

GENTLEMEN,—The thymus is a remarkable organ, since it appears under three different forms. The primary thymus is composed of glandular epithelial cells, the secondary of lymphadenoid tissue, and the tertiary of fat. The primary thymus of glandular epithelium persists in some fish and secretes mucus; in the higher animals all that normally remains of it at birth are the concentric cell masses of Hassall. But Chiari[3] has shown that the cysts of the thymus which are found in infants, and to which the names of tubercle, syphilis, and abscesses have often been given according as their contents are caseous, solid, or puriform, are really true degeneration cysts lined by epithelium. These cysts represent the mucus secreting follicles of fish, which usually shrivel up into the concentric bodies, but may be found in the kitten as cysts lined by ciliated epithelium (Capobianco, *vide infra*). Epithelial remnants may also be the source of dermoid cysts, of malignant tumours—in Rolleston's[4] case as mucus secreting cells, or as epithelioma with true nest cells in the case described by Paviot and Gerest.[5] It is this primary thymus which is so closely related in its manner of origin to the thyroid gland. The secondary thymus, composed of lymphadenoid tissue, is a paired organ in birds. In mammals it is generally fused into one mass, which may have processes running up to the trachea representing the position of the primary diverticula. It has a peculiar arrangement of lobes and lobules, which distinguishes it from compound lymphatic glands. Each lobule is divided into a polyhedral cortex, having a germinating mass of cells and a medulla in which are found the concentric bodies. It is an organ which is richly supplied with blood, and the lymphatics leading off from the sinuses round the polyhedral follicles, after passing through the glands of the superior mediastinum, join the thoracic and right lymphatic duct to enter the veins of the neck. This lymphadenoid thymus, which commences to develop and remove the primary one about the fourth month, reaches its fullest development at birth. It certainly forms leucocytes, and during embryonic life at least red cells also, even in the highest mammals. The formation of leucocytes takes place earlier in the thymus than in the lymphatic glands. The thymus was first removed by Friedleben,[6] and his experiments have lately been repeated by Tarulli.[7] The young animals did not suffer from the loss. After birth it persists for a variable length of time up till puberty before it changes into the tertiary fat organs. It persists throughout life as a lymph-adenoid organ in some fish and reptiles, and may be met with in man long after puberty. The thymus may be diseased at birth owing to the cysts already mentioned. If hæmorrhage into these cysts or inflammation sets in rapidly increasing dyspnœa may ensue (Durante[8]), and the organ being hidden behind the sternum the cause of the dyspnœa may remain unsuspected. Sudden death from asphyxia frequently occurs from this cause in newborn infants and young children, and the enlarged thymus is only discovered post mortem. A large lymphadenoid thymus may be met with in adults associated with enlarged thyroid, and may form an additional unsuspected cause of dyspnœa which is not relieved by an operation upon the thyroid. Perhaps the pressure on the large veins at the root of the neck causes venous congestion and enlargement of the thymus, as happens in the spleen from similar causes The thymus is also enlarged in the cases of lymphadenoma to be afterwards referred to. The tertiary fat thymus is always to be found in man, the peculiar lobulation of the fat showing that it has been derived by a metamorphosis of the lymphadenoid organ (Waldeyer,[9] Capobianco[10]). The fat is, however, but a quiescent stage of lymphadenoid tissue as is the yellow marrow of bone, and so reappearance of the lymphadenoid tissue takes place in adults suffering from lymphadenoma. A large lymphadenoid thymus is met with in diseases accompanied by anæmia, such as Addison's disease and the acromegaly of Marie, &c. There is some antagonism between the thyroid and thymus gland. The thymus is well developed in cretins; feeding with the thymus gland relieves exophthalmic goitre.[11] Siegel cured a child aged two and a half years threatened with asphyxia by displacing the enlarged thymus from the anterior mediastinum into the subcutaneous tissue.[12]

LYMPHATIC GLANDS.

True lymphatic glands are only found in birds and mammals. The thymus supplies their place in the lower forms. There are also lymphadenoid masses in connexion with the kidney of fish; the salamander has lymphadenoid tissue round its liver. In the frog the thymus early changes into fat, and the spleen has no Malpighian bodies, but there are besides the marrow, which is red in the spring, also rudimentary tonsils and the fat bodies in the abdomen, which are during part of the year lymphoid in structure. Lymphatic glands are few and small in rodents, more numerous in the carnivora and ungulates, but most numerous in man (Gulland[13]). In some mammals, such as the sheep, small glands, intermediate between the spleen and lymph glands, are found in front of the vertebræ in the mesentery and contain blood in them, the so-called hæmolymph gland.[14] But they have not been shown to exist in man. Lymphatic glands are developed relatively late in embryonic life, they do not appear until after the middle of this period—i.e., after the thymus has become developed as a lymph-adenoid organ. Lymphatic glands vary much, some having only a single follicle forming a minute mass from 1 to 2 mm. in diameter. There are others with more than one follicle varying in number up to the ordinary compound lymphatic gland. Lymphatic glands undergo retrograde metamorphosis, especially in old age, and turn into fat like the bone marrow and thymus. But at any time they may be excited to regeneration, a compound gland may develop from a single follicle, or a new formation of

[1] These lectures were illustrated by specimens from the Anatomical and Pathological Museums of the Royal College of Surgeons of England and of the Westminster Hospital.

[2] Lecture I. appeared in THE LANCET of March 6th, 1897.

[3] Chiari: Zeitschrift für Heilkunde, 1894, Band xv., s. 403.

[4] Rolleston: Journal of Pathology and Bacteriology, 1896, vol. iv., p. 228.

[5] Paviot et Gerest: Archives de Médecine Expérimentale et d'Anatomie Pathologique, 1896, tome viii., p. 606.

[6] Friedleben: Die Physiologie des Thymusdrüse in Gesundheit und Krankheit. Frankfort, 1858.

[7] Tarulli: Atti dell' XI. Congresso Medico Internazionale, Roma, 1894, vol. ii., Fisiologie, p. 19.

[8] Durante: Comptes rendus de la Société de Biologie, 1896, p. 282.

[9] Waldeyer: Sitzungsberichte der Akademie der Wissenschaften, Berlin, Band xxv., s. 433.

[10] Capobianco: Archives Italiennes de Biologie, 1892, vol. xvii., p. 55.

[11] Owen: Brit. Med. Jour., vol. ii., 1896, p. 1017.

[12] Centralblatt für Chirurgie, 1896, S. 1141.

[13] Gulland: Development of Adenoid Tissue, especially the Tonsil and Thymus; also Nature and Variety of Leucocytes, Laboratory Reports of the Royal College of Physicians of Edinburgh, 1891, vol. iii.; also The Development of Lymphatic Glands, Journal of Pathology and Bacteriology, 1894, vol. ii., p. 447.

[14] Vincent and Harrison: Journal of Anatomy and Physiology, 1897, vol. xxxi., p. 176.

lymphatic glands take place in connective tissue. The process is the same as in the embryonic formation, leucocytes emigrate into the connective tissue and split up its fibres into retiform tissue. The only difference in the lymphadenoid tissue arising from the excitation of diseased products is that the arrangement of germ centres is not so well defined as in the normal gland.

Lymphatic glands have two functions, the production of leucocytes and the protection of the circulation from the entrance of organisms through the skin and mucous membranes. Organisms may be carried to a gland where they are arrested and ultimately destroyed, or they may grow through the gland, destroying it meanwhile, and so reach the circulation. But those of the highest virulence either enter by the bloodvessels and so escape the lymph glands or they pass at once through the gland without stopping and without setting up any reaction. Besides the lymphatic glands, through which all lymph has to pass, the mucous membranes of the respiratory and alimentary canal have a further means of preventing the entrance of organisms and their products in the shape of follicles situated in it, and there is also a considerable development of the tissue in the mucous and sub-mucous coats not specially gathered up into follicles, but diffused throughout it. This development of lymphadenoid tissue becomes more striking when we see how slight is the development of lymphadenoid tissue in connexion with the pelvis of the kidney, the ureters, and the bladder, and the absence of lymphadenoid tissue in connexion with the cerebro-spinal lymph spaces. The cerebro-spinal fluid is practically lymph in an extensive system of sinuses, yet this lymph passes directly into the venous blood, and there are therefore cell products or metabolites due to brain activity which do not need to be rendered harmless before they are allowed to enter the circulation. A diffuse form of lymphadenoid tissue is met with in the mucosa and sub-mucosa of the conjunctivæ, nose, pharynx, larynx, bronchi, stomach, and intestines, in some parts less marked than in others—e.g., in the œsophagus; but in all parts capable of being abnormally developed in the course of disease. Of the special masses of lymphadenoid tissue the palatal tonsils develop around epithelial sacs which remain as the crypts. The pharyngeal tonsil forms around the epithelial crypt developed in connexion with the hypophysis, and the lingual tonsil is a lymphadenoid mass about the foramen cæcum. The solitary and agminated follicles develop in the mucosa between the glandular epithelium of the ileum, cæcum, and appendix. But the function of this tissue is not limited to arresting or rendering harmless materials about to be absorbed, the follicles also produce cells which freely pass into the mouth, intestine, and bronchi, and prevent the excessive development of organisms in these canals. Foreign bodies can easily enter through an intact mucous membrane, whereas in the case of the skin there must be a lesion of the surface or the material must be well rubbed into the mouths of the hair follicles and sweat glands. Coal dust when inhaled passes through the intact epithelium of the bronchi and alveoli to the neighbouring glands. Carmine which has been mixed with the food of the animal passes out through the intact wall of the intestines, especially by way of the solitary and agminated follicles. Of all micro-organisms the tubercle bacillus has yielded most interesting experimental results. If a culture of tubercle bacilli be injected into the trachea of an animal the bacilli pass through the intact mucous membrane and infect the neighbouring glands. Similar results may be obtained by feeding animals on material containing tubercle or anthrax bacilli, which pass through the uninjured intestine. In the human subject in connexion with tuberculous glands in the neck a visible lesion in the mouth or on the tonsil is quite the exception, a carious tooth being the only frequent one. Indeed, the local inflammation causing hypertrophy of the tonsil or adenoid vegetations seems very rarely to be followed by tuberculous glands in the neck. It is quite the exception to see a combination of hypertrophied tonsils or adenoid vegetation and tuberculous glands in the same patient.

Lymphatic glands and follicles may be affected through the circulation, like the spleen and bone marrow. The affections are generally sub-acute or chronic rather than acute. The specific fevers, syphilis, and tubercle when generalised, may cause a widespread enlargement. The acutest form of general enlargement is the hæmorrhagic swelling characteristic of plague. More frequently diseases are due to direct infection of the follicles and infection of the glands by way of the lymphatics. In acute inflammation there is an increased circulation through the gland with a more rapid production of cells. The inflammation may subside owing either to the destruction of the organisms or because the infection has passed on through the gland into the circulation. One of or all the follicles of the gland may pass from the stage of inflammation to that of suppuration, which may extend outside the gland, the lymphadenoid tissue forming a slough in the centre. This is often seen in gonorrhœal buboes and in the intestinal follicles. Another form of acute inflammation is due to streptococci, as in diphtheria, scarlet fever, and erysipelatous complications; there is then marked infiltration of the gland and the surrounding connective tissue with œdema and fibrin. A chronic inflammation of lymph glands and follicles consists at first of a simple overgrowth of the gland formed chiefly by an increased number of cells in the meshes, and the distinction between the germ follicles and the medulla is less clearly marked. But if the chronic inflammation continues there is an increase in the connective tissue derived from the capsule and septa of the gland, and thus the amount of lymphadenoid tissue, including cells, becomes really diminished although the gland may be apparently enlarged. The stopping power of lymphatic gland tissue varies with the different diseases. Thus, in syphilis, although the gland enlarges there is no evidence of any power of arresting disease. The attempt to arrest syphilis by excising the hard sore and the glands has been a complete failure. On the other hand, it seems to have a considerable power in preventing the extension of tubercle. Usually the tubercle bacilli are caught in the germ follicle, where they form tubercles which afterwards caseate. Less often there is no definite formation of tubercle, or indeed of giant cells, nor is there any early tendency to caseate, but diffuse infiltration of the whole gland structure. It is then extremely difficult to distinguish a gland so affected by tubercle from lymphadenomatous glands by simple microscopic examination, although inoculation if successful may demonstrate that the disease was of a tuberculous nature. Repair and healing take place in lymph glands by scar tissue derived from the connective tissue, capsules, and septa, the lymphadenoid tissue proper taking no share in it.

LYMPHADENOMA.

Lymphadenoma is a suitable term for those affections the various forms of which have one feature in common—viz., a growth of lymphadenoid tissue closely resembling in structure that of lymphatic gland. The subdivisions of lymphadenoma are excessively confusing from the tendency to classify by some one prominent feature and from the desire of splitting up clinical cases into an endless number of groups. The names in use are employed in very different senses, and it would be difficult to find any two cases of a series which do not exhibit striking differences. We must anticipate in the classification of cases of lymphadenoma the recognition of its definite cause, and as there are many indications that the causes are not very far separated from that of syphilis and tubercle we can take as our guide the analogy of tubercle and distinguish a local disease, local lymphadenoma, from a general disease, generalised lymphadenoma or lymphadenomatosis, in which lymphadenoid tissue is involved in widely separated positions, although to a very various extent. Of local lymphadenoma we may further mark out two kinds, one simple or benign local lymphadenoma, in which the cause is apparently more or less continuously acting upon the lymphadenomatous tissue from the surface of the mucous membrane or skin; whereas in the more malignant form, malignant local lymphadenoma, there is a lack of evidence as to the external source of the irritation, or such irritation as may be present is inadequate, the essential feature being the continuous proliferation of cells from some cause which must be within the tumour itself. So also in generalised lymphadenoma or lymphadenomatosis we can recognise the local origin of the growth from some cause which widely affects lymphadenoid tissue, but in which the development of the disease can be controlled by treatment, and, on the other hand, a malignant generalised lymphadenoma in which the cause must reside within the growths themselves as in other forms of cancer. In a tabular form, then, the divisions of lymphadenoma are: (*a*) Local lymphadenoma: (1) simple or benign; and (2) malignant. (*b*) Generalised lymphadenoma or lymphadenomatosis: (1) benign; and (2) malignant. The other names in common use—leucocythæmia

or leukæmia, pseudo-leukæmia, Hodgkin's disease, and lymphosarcoma—I can affirm from an examination of the literature of the subject to be used scarcely by any two writers in the same sense. The term "Hodgkin's disease" should be employed as synonymous with "lymphadenoma"; Dr. Hodgkin's paper is entitled "Some Morbid Appearances of the Absorbent Glands and the Spleen." He did not describe any such a well-defined disease as, for instance, did Dr. Addison. The attempt to apply his name to any special form of lymphadenoma cannot be sustained. Leucocythæmia or leukæmia (some writers distinguish the two) are names for one of the signs of the disease which may be present or absent, or absent in the early stages, present later, and finally disappear before death. It has often been used as a name without there being evidence that the blood was even examined; its existence may have been overlooked where only one examination has been made, on account of the sudden variations. An increase of leucocytes may arise from some temporary inflammatory cause or be merely relative owing to the diminution of red cells. Some writers call a slight increase of white cells leucocytosis, some call it pseudo-leukæmia, and others use the term pseudo-leukæmia when no increase of white cells was noticed. Another complexity has been added since the division of the white corpuscles, for which we are indebted to Professor Ehrlich. From a careful comparison between the microscopical examination of the blood, the clinical features of the disease, and the results of the necropsy I do not believe that we can decide from the examination of the blood alone as to the parts of the lymphadenoid organs specially affected. For instance, cases have been called "myelogenous leucocythæmia" from one examination of the blood in the entire absence of clinical and post-mortem confirmation. Lymphosarcoma is a term liable to be confounded with sarcoma growing in a lymphatic gland. It is often used as indistinguishable from lymphadenoma; for instance, we read of multiple "lymphosarcoma" being cured by arsenic. Dr. Wilks[15] was really the first to bring this subject of lymphadenoma forward, and it was after his earlier observations had been made that he lighted on Hodgkin's paper, which had until then received no attention. His name "anæmia lymphatica" for the generalised form is better than "leucocythæmia," seeing that it is the decrease of red cells and not the increase of the white ones which is the more important. The only rational way at present of grouping the various cases of lymphadenoma is by taking the point of origin in each case. Although we remain as yet ignorant as to the causes, yet by considering the probable ways of entry we shall be prepared to receive further evidence of causation without having to make extensive changes in the system of classification. This will be much better than naming the case after some one particular sign of the disease which happens to be prominent.

[15] Wilks: Guy's Hospital Reports, 1856, p. 103; 1859, p. 109; and 1865 p. 56.

MANCHESTER MEDICO-ETHICAL ASSOCIATION.—A deputation from this society was appointed to interview the Members of Parliament representing the counties of Lancashire and Cheshire for the purpose of obtaining their active opposition to Mr. Tatton Egerton's Bill for the Registration of Midwives. Along with the deputation from the Lancashire and Cheshire Branch of the British Medical Association they were, through the kindness of Mr. J. W. Maclure, received by a number of local members and others, among whom were Mr. J. W. Maclure (in the chair), Lord Balcarres, Sir Henry Howorth, Sir Blundell Maple, Mr. T. P. O'Connor, Mr. Tatton Egerton, Colonel Forster, Mr. Isaacson, Mr. Lees Knowles, and Mr. C. Schwann. Two members of the Lancashire and Cheshire branch having spoken, a member of the deputation addressed the meeting and stated several points which were essential to the drafting of any Bill aiming at the registration and control of midwives. The danger of all such legislation was touched on, and objection was taken to the Bill as a whole, on the ground that any amendment thereof would, in order to be satisfactory, entirely alter the complexion of it, and that it could not be expected or hoped that such radical alterations would even probably be effected during the progress of the Bill through committee. In an after discussion of an informal nature with some of the members the deputation had a further opportunity of explaining their views.

The Arris and Gale Lectures

ON

SOME POINTS IN THE PATHOLOGY OF HEART DISEASE.

Delivered at the Royal College of Surgeons of England on Feb. 22nd, 24th, and 26th, 1897,

BY ERNEST H. STARLING, M.D., M.R.C.P. LOND.,

JOINT LECTURER ON PHYSIOLOGY AT GUY'S HOSPITAL.

LECTURE III.[1]

ON THE CAUSATION OF DROPSY IN HEART DISEASE.

MR. PRESIDENT AND GENTLEMEN,—The main object of the experiments on the circulation which I described in the last lecture was to determine so far as possible the factors which are responsible for the production of the anasarca and serous effusions met with in heart disease. In dealing with this question it must be remembered that dropsy consists in the accumulation of lymph or the fluid which has transuded from the bloodvessels in the connective tissue spaces, and depends therefore on a disturbance of the balance which normally exists between the production and absorption of lymph in the affected parts. Since the questions to be considered and their experimental investigation differ according as we are considering the production of anasarca or of serous effusions, I shall treat of the causation of dropsy in these two situations under separate headings, although I hope to show that the factors involved in each case are essentially identical. We may deal first with the question of the production of œdema in the connective tissues in the limbs. In my previous lectures on the principles of lymph production I dealt chiefly with the lymph flow from the abdominal organs, since the existence of a continuous flow from the abdominal viscera in the animal at rest makes this region the most adapted for experimental investigation. As a result of my experiments I came to the conclusion that lymph formation must be looked upon as the product of two factors—viz., the pressure of the blood in the capillaries and the permeability of the capillary wall. The process, therefore, is analogous to filtration—increase of the filtration pressure or diminution of the resistance of the filtering membrane increasing the amount of filtrate—i.e., lymph. When we attempt to test the truth of these principles on the lymph production in the limbs, we are met at once by the difficulty that if one places a cannula in one of the large lymphatics in the limb of an animal at rest one obtains no lymph flow at all. In order to obtain any lymph in this manner it is necessary to knead or massage the limb or to carry out passive movements. We must not, however, conclude from the absence of a lymph flow through the lymphatics that there is no lymph produced in the resting limb, since it is quite possible that lymph or fluid may have transuded from one portion of the capillaries and been absorbed by another portion. We have, in fact, in order to explain the absence of lymph flow from the resting limb, to consider not only the mechanism of the lymph production, but also the absorption of the transuded fluid. In this case we can evidently leave the absorption by way of the lymphatics out of the question, since it is the flow, or rather the absence of flow, along these vessels that we are considering. It seems, indeed, probable that the lymphatic drainage system of the connective tissues carries on its functions only during activity of the limb or its component parts. All the experiments which have been made on the flow of lymph from the limb lymphatics bring out strongly the fact that extensive alterations in the filtration pressure—i.e., the pressure in the blood-capillaries—cause only slight changes in the lymph flow, in no way comparable to the effect which would be produced by similar changes in the vessels of the abdominal viscera. We must conclude, therefore, that, compared with the latter, the limb capillaries are extremely impermeable—i.e., present a great resistance to filtration. Now, as I have shown, the permeability of a

[1] Lectures I. and II. appeared in THE LANCET of Feb. 27th and March 6th respectively.

capillary wall, as of an organic filter, may affect not only the quantity of fluid transuding from the plasma under a given pressure, but also the composition of this fluid. Thus if we filter serum through filter paper the filtrate has exactly the same composition as the original fluid. If we use a Chamberland filter we find that the filtrate contains less proteid than the original fluid, and the proteid which passes through becomes less and less as the filtration is continued and the pores become more and more stopped by the retained proteid. By soaking the porous cell in a solution of gelatin so as to fill all its interstices with this substance we may, as Martin has shown, make this impermeability to proteids absolute, without in any way affecting the passage of water and salts through the filter. Hence we may use this method to obtain the crystalloids and water of the serum or blood absolutely free from the proteids and other colloid constituents of these fluids. We should therefore expect to find that the capillaries of the limbs, which present so great a resistance to filtration, would at the same time keep back the larger part of the proteids, so that the transuded fluid would be extremely poor in these substances. Now, on analysing the few drops of lymph which can be squeezed from a cannula placed in a lymphatic of the limb, we find that the difference between the composition of this lymph and that obtained from the permeable capillaries of the liver is by no means so great as we should expect from the relative effects of changes of intra-capillary pressure on the amounts of transudation in these two situations. Whereas the lymph derived from the liver contains from 6 to 8 per cent. of proteids (almost as much as the blood-plasma itself), that from a lymphatic of the limbs contains 2, 3, or 4 per cent. We have no right, however, to assume that the lymph as obtained from a cannula in a limb lymphatic represents in composition the lymph or interstitial fluid which is transuded from the capillaries. Indeed, it may be shown that the fluid flowing from the cannula must be considerably more concentrated than the original transudation. In order to understand this point we must consider carefully the conditions under which transudation and absorption are going on at all times in the connective tissues of the limb.

We have already seen that, given a certain degree of impermeability, the filtrate through a membrane contains less proteids than the original fluid. Now we know in the case of dissolved salts that the separation of water from the solution, leading to the concentration of such a solution, involves the expenditure of a considerable amount of energy. This concentration can be effected by evaporating the solution, in which case the necessary energy is supplied in the form of heat: but we may effect this concentration in a different way. A porous cell is permeable to water and dissolved salts; if, however, an amorphous precipitate of copper ferro-cyanide be deposited in the meshes or pores of such a filter it will then be found that the cell wall is no longer permeable to dissolved salts. A cell wall thus impregnated with copper ferro-cyanide is generally spoken of as a semi-permeable membrane. If such a cell be filled with a solution of salt or other crystalloid, and be then sealed and immersed in distilled water, it will be found that, although no salt can diffuse out of the cell, water diffuses into the cell until the pressure inside has attained a considerable magnitude. In the few cases in which it has been possible to measure the pressure thus produced it has been found that this "osmotic pressure" is approximately equal to that which the dissolved molecules would exert if they were present in the cell in the form of gas. If now the pressure inside the cell be raised artificially above the osmotic pressure of the dissolved substance, pure water will pass out of the cell, and the solution inside will become more concentrated, until its osmotic pressure is equal to the hydrostatic pressure in the cell. The question now arises whether similar reasoning may not hold good in the case of the separation of colloids—such as proteids—from their solutions. Since the osmotic pressure of a substance is equal to that pressure which it would possess were it in the form of a gas, it is evident that in a solution of given strength the osmotic pressure must be smaller the greater the molecular weight of the substance—i.e., the smaller the number of molecules present. Although our knowledge of the nature and properties of colloids is still very imperfect, it seems practically certain that all of them possess enormous molecules, if not in point of size, at any rate in point of molecular weight. That their size is probably also large seems to be indicated by the difficulty with which these colloids pass through fairly coarse pores, such as those of a Chamberland filter. We should, therefore, expect that the proteids of the plasma and serum, if colloids can be regarded as at all analogous to crystalloids in their solution, would possess a certain osmotic pressure, small, no doubt, in comparison with the huge osmotic pressures of fairly dilute salt solutions, but still large enough to be considered in relation to the forces acting in the body. In attempting to determine directly the osmotic pressures of salt solutions, the very size of the results is the cause of great difficulty in their accurate measurement, the vessels leaking or bursting before the final pressure has been reached. Moreover, it seems to be very difficult to prepare a reliable semi-permeable cell by Pfeffer's method. In the case of the colloids of serum these difficulties do not arise. We have only to soak any disc of parchment, peritoneal membrane, or even fine wire gauze in gelatin to obtain a membrane perfectly impermeable to colloids, and the pressures we have to deal with are so small that a very little support of the membrane suffices to prevent leakage. If, for instance, we take a thistle funnel, over the open end of which such a membrane is stretched, fill its bulb with serum, and immerse it mouth downwards in salt solution (isotonic or even hypertonic as compared with the serum), we find that fluid (water and salt) passes into the serum and causes a considerable elevation of fluid in the stem of the funnel, which may amount to a height corresponding to a pressure of from 30 to 40 mm. Hg. Since this result is invariably obtained and the height of the pressure is proportional to the amount of proteids contained in the serum, we must look upon from 30 to 40 mm. Hg. as representing the osmotic pressure of the proteids of the serum. If at the beginning of the experiment the stem be also filled with serum to a height of, say, a metre, the fluid rapidly sinks in the stem, owing to the filtration of water and salt through the gelatin membrane, until the height is equal to 30 or 40 mm. Hg. So that to concentrate a proteid solution by filtration one must employ a pressure which is greater than the osmotic pressure of the proteid in solution; and in this concentration, since the osmotic pressure of the fluid increases, its potential energy, as measured by it power of attracting water and raising it to a height, is increased. We must therefore conclude that whenever a proteid solution is filtered through a membrane more or less impermeable to proteids, with the production of a more watery filtrate, a certain amount of energy is used up in the process, the hydrostatic pressure used for the filtration being converted into an increased osmotic pressure of the concentrated fluid. In such a case the fluid within the cell or vessel will attract the more watery fluid outside with a force represented by the difference in the osmotic pressure of the two fluids, whereas the force causing filtration or transudation is only represented by the amount by which the hydrostatic pressure inside the vessel exceeds this difference in the osmotic pressure.

We may now apply these principles to the conditions as they exist in the living body. As the blood passes from the arterioles through the capillaries into the veins it gets from a region of high into a region of low pressure. We may therefore, in order to dissociate more easily the processes occurring in the tissues, divide the capillaries into two parts—the arterial and the venous capillaries. In the arterial capillaries the blood plasma is at a pressure which exceeds the osmotic pressure of the plasma proteids. From these capillaries, therefore, a transudation of a watery fluid takes place much poorer in proteids than the plasma. The transudation thus produced reaches and bathes the outside of the venous capillaries. In these vessels, however, the pressure of the blood has fallen to a point below that corresponding to the osmotic pressure of the plasma proteids. Here, therefore, the force tending to the absorption of the water and salts—viz., the osmotic pressure of the plasma—is greater than the force causing transudation—viz., the hydrostatic pressure of the blood in the vessels. Now this absorption will affect only water and salts, since we know of no mechanism by means of which the proteid lying outside the vessel wall could be absorbed. We have therefore a continual exudation of a fluid very poor in proteid from the arterial capillaries and a continual taking up of the water and salts of this fluid by the venous capillaries. It is evident that the resultant of these two processes, the fluid which remains in the tissue spaces and is squeezed along the lymphatics with every movement of the limb or pressure on the spaces, must contain a considerably higher percentage of proteids than was contained in the fluid as it originally left the bloodvessels. Hence the difference between

the proteid percentage of liver lymph and limb lymph is by no means so great as would correspond to the difference in the permeability of the vessels in these two situations. When the fact of the absorption of fluid by the bloodvessels was once definitely established it seemed difficult to account for the presence or use of the lymphatics. Why should a complete and special system of absorbents be developed in all parts of the body if the whole office of absorption might be and was normally carried out by the bloodvessels? If we assume, as many authorities do, that the vascular wall has the power of actively taking up proteids and fluids from the surrounding tissue spaces no work is left for the absorbents. There appear to be no grounds for such an assumption, and I have sought in vain for any evidence for the absorption of proteids by the bloodvessels. Any proteid which leaves these vessels with the transuded lymph is lost for the time to the vascular system. If it is not used up by the tissue elements it must be collected by the lymphatics and restored to the vascular system by way of the thoracic or right lymphatic duct. It is on account of this inability of the bloodvessels to absorb effusions which contain more than a certain percentage of proteids that it is so often necessary to remove such effusions by surgical means. In such cases there is no lack of bloodvessels in close connexion with the fluid to be absorbed. It is, however, the blocking of the surrounding tissue spaces and obliteration of the lymphatic channels which determines the failure of absorption. It might be thought that this impermeability of the limb capillaries would be of disadvantage to the organism, since it limits the supply of proteids to the tissues of the limb. So far as we know, however, the proteid metabolism of these tissues forms but a very small fraction of the total metabolism of the body. Increased functional activity of the muscles, for instance, causes hardly any increase in the excretion of urea, while a marked increase is observed in the excretion of CO_2—that is to say, the muscle derives its food supply chiefly from the diffusible constituents (e.g., dextrose) of the blood. On the other hand, it would be extremely disadvantageous if the limb capillaries at all approached the liver capillaries, or even those of the intestines, in permeability. The smallest change in position, in consequence of the effects of gravity, would alter the pressure in the capillaries and cause large changes in the amount of lymph poured out, so that the legs would have to be provided with a series of lymph hearts to pump up the lymph which was turned out in the upright position. We have an opportunity of observing the effects of such changes in the hydrostatic pressure of the blood in cases where the permeability of the capillaries has been altered in consequence of inflammatory conditions. In such cases the beneficial effects of raising the limb in relieving tension—i.e., the distension of the tissue spaces by lymph—are well known.

We may now proceed to utilise the knowledge we have gained of the factors regulating the formation and composition of lymph in the limbs under normal conditions for the purpose of explaining the œdema of heart disease. As I have already mentioned, it has been customary to classify the œdema of heart disease with that due to venous obstruction, such as occurs when the large veins are pressed upon by growths or obstructed by thrombi. The production of œdema in consequence of venous obstruction was shown to be possible by the experiments of Paschutin and Enminghaus, and still more strikingly by Ranvier's experiment. The latter observer showed that if the inferior vena cava were ligatured and the sciatic nerve on one side cut, the leg on the same side became œdematous in consequence of the increased transudation induced by the high pressure in the capillaries. Many authors have observed the production of œdema as the result of an elastic ligature round the upper part of a limb. In all these cases, however, the rise of pressure in the capillaries necessary to produce œdema is very considerable; and Cohnheim himself, in discussing the point, concludes that the œdema is not sufficiently explained by the increased venous pressure in heart disease. In my last lecture I showed that the immediate as well as the remote effect of heart failure, however caused, was to bring about a diminution rather than an increase of capillary pressure, and we know that such a diminution of pressure in the capillaries causes increased absorption from the connective tissue spaces, and therefore a less amount of fluid in these spaces. An experiment of Cohnheim gives some clue to the explanation of the difficulty. It is well known that ligature of one femoral vein in the dog is not followed by any œdema. Cohnheim found, however, that if a dog be bled every few days for a week or two before the operation, so as to render his blood hydræmic, ligature of one femoral vein gives rise to œdema of the leg, extending all round the neighbourhood of the wound. If the hydræmia be brought about just before the ligature, by bleeding the dog and injecting a corresponding amount of saline fluid, no œdema results. Cohnheim concludes, therefore, that long continued hydræmia alters and injures the vessel wall, so making it more permeable, so that a rise of capillary pressure, which would be without effect in a normal animal, is now able to considerably increase the lymph transudation and cause distension of the tissue spaces. We have seen that, although there is no plethora, there is hydræmia in heart disease. Moreover, the nutrition of the vessel wall is injuriously affected by the failure of the circulation and consequent absence of a proper renewal of oxygen and nutrient material to the capillary wall. These factors coöperate in increasing the permeability of the wall to such an extent that a very slight increase in the intra-capillary pressure, such as may be brought about by a dependent position of any part, is sufficient to cause increased transudation and consequent œdema. In heart disease the capillary pressure is not higher, but rather lower, than in a normal animal. The dropsy is entirely conditioned by the state of the capillary wall.

In adopting this view as to the exclusive responsibility of the change in the capillary wall for the œdema of heart disease we are confronted by an apparent difficulty. We are accustomed to regard increased permeability as connoting not only an increase in the amount of fluid transuded, but also in the concentration of the fluid. Now if we analyse the fluid of œdema in heart disease we find that it contains only from 0·3 to 0·5 per cent. of proteids—i.e., considerably less than that found in the lymph from the limbs of normal animals. How, then, can we speak of the permeability of the vessel wall being increased under these conditions? I think the answer lies in the fact that increased concentration is not the necessary sequence of increased permeability. Thus, to return to the example of various filters, a porous cell saturated with gelatin presents a much greater resistance to filtration than does a film of peritoneal membrane which has been soaked in the same substance. Yet in each case the composition of the filtrate is the same, no proteids having come through. On the other hand, we may increase the permeability of the gelatinised Chamberland filter by boiling it and dissolving out all the gelatin. After this, not only is the amount of the filtrate under a given pressure increased, but the filtrate is qualitatively different in that it now contains proteid. It is quite possible that the changes wrought on the capillary wall by the mingled effects of hydræmia and stagnation of the blood have the same result as the thinning of the colloid filtering membrane—i.e., merely a quickening of filtration. On the other hand, the changes met with in inflammation are much severer and have for an effect the utter alteration of the quality of the membrane.

It being allowed, then, that the qualitative permeability may be normal while the quantitative permeability is increased, it is easy to account for the small amount of proteid present in the œdema fluid. For then not only is the original blood plasma poorer in proteid than it is normally, but the chief factor tending to increase the concentration—i.e., the absorption by the bloodvessels—is practically abolished. For the effect of the slow blood current is to equalise the pressures in veins and arteries, so that if the hydrostatic pressure in the arteries is sufficient to cause abnormal transudation an almost equal amount of fluid will be poured out by the veins. Absorption by the bloodvessels can now only occur when the capillary pressure in a part is considerably reduced by raising it above the level of the heart. It seems probable that the obstruction to the flow of lymph from the thoracic duct into the blood, as well as the distension of the duct from the largely increased lymph flow from the liver, may contribute to the production of œdema in the rest of the body. This factor must, however, be only a subordinate one, and is far transcended in importance by the increased transudation from the vessels which occurs in this disease.

The production of effusions into the serous cavities.—The arrangement of the vascular supply is so different in the case of the pleural and peritoneal cavities that it is desirable to consider the causation of effusion into these two cavities separately, and we will deal first with the question of pleuritic effusion. On this point a number of experiments were made by Leathes and myself, and we found that the

conditions governing increased effusion into these cavities are very similar to those we have just studied in the limbs. Thus in the latter we saw that so long as the vessels are normal it is impossible by any moderate increase in the capillary pressure to produce any marked œdema or effusion. On the other hand, it is easy to produce effusion by alterations in the vessel wall, and when such alterations have been effected every rise of pressure is followed by a considerable increase in transudation. In our experiments on the pleura we attempted, first, to produce effusion by increasing the capillary pressure in the part. Since the blood from the pleural parietes has several different channels of exit, the only method one can use to bring about a rise of capillary pressure is the injection of large quantities of normal saline solution into the circulation. We tried at the same time to intensify the rise by obstructing the vena azygos at its opening into the superior vena cava, and also ligatured both thoracic ducts. Although in these experiments an enormous degree of œdema was found in the retro-peritoneal tissue and in the posterior mediastinum the pleural cavities themselves contained only 2 or 3 c.c. of fluid. On the other hand, the injection of small amounts of jequirity into the pleural cavity produced a typical pleuritis, with destruction of the endothelium, and fibrinous and serous exudations. In such cases the injection of large quantities of normal saline into the circulation caused a large and rapid transudation of fluid through the injured capillaries into the pleural cavities, and the death of the animal within two or three hours from asphyxia. A simple destruction of the pleural endothelium, as by scalding or the injection of sodium fluoride into the pleural cavities, had no effect in producing effusion. We therefore concluded that for the production of effusion it was necessary that the tissues, and especially the blood-vessels in the peripleural connective tissue, should be affected. Any fluid which is poured out in the tissues lying under the pleural endothelium, whether in the chest wall or in the mediastinal tissues, rapidly finds its way into the pleural cavities, so that it is possible to kill an animal by asphyxia by allowing fluid to run into the carotid sheath, which is continuous with the connective tissue spaces of the posterior mediastinum. In such cases at the death of the animal both pleural cavities are found full of fluid, although the endothelium separating the mediastinum from the pleural cavity is still intact, and presents no apparent openings for the passage of the fluid.

The hydrothorax, therefore, of heart disease must, like the œdema of the limbs, depend in the first place on an alteration and increased permeability of the vessel wall occasioned by the stagnation and poor quality of the blood. Since, moreover, we have seen that obstruction of the thoracic duct causes distension of the mediastinal tissues, and that fluid can pass easily from these tissues into the pleural cavities, it seems probable that the obstruction to the flow of lymph into the blood through the duct, which is present in uncompensated heart disease, must materially contribute to the hydrothorax. Whether an increased transudation in the lungs may also aid in the production of the effusion we have no experimental evidence to show.

In the peritoneal cavity there are two distinct systems of capillaries, either of which might be responsible for the production of ascites. On the one hand, we have the capillaries of the spleen and alimentary canal, which form the radicles of the portal vein; on the other, the liver capillaries which drain into the hepatic vein. We have already seen that these capillaries differ markedly both in their permeability and in the effect on the pressure in them of various changes in the circulation. Heart failure, for instance, such as is brought about by injection of oil into the pericardium causes a marked rise of pressure in the hepatic capillaries, but a fall of pressure in the intestinal capillaries. With regard to the ascites determined by changes in the portal system of capillaries, it would seem that the result of increased flow of lymph in this capillary region depends on the condition of the peritoneal endothelium. Thus ligature of the portal vein causes a very large increase of the lymph flow from the thoracic duct, but only a slight exudation of fluid into the peritoneal cavity; if, on the other hand, we increase the permeability of these capillaries by plunging several coils of intestine into hot water, or even into distilled water, at the temperature of the body, we find that, although the lymph flow from the thoracic duct is hardly changed, there is a considerable exudation into the peritoneal cavity. In the latter case the transudation from the intestinal capillaries, instead of being confined beneath the endothelium and compelled to traverse the lymphatics towards the cisterna and thoracic duct, can escape easily through the damaged endothelium and adopts this path of least resistance. In heart disease, however, the most important source of the ascitic fluid is probably the liver. Even in the normal animal a slight exaggeration of the conditions present in heart disease will induce an ascites, which seems to be derived from the liver capillaries. Thus in one experiment I ligatured the thoracic duct and obstructed the inferior vena cava above the liver in order to raise the capillary pressures in this organ. A condition of hydræmic plethora was then produced by the injection of 1500 c.c. of normal saline solution. Two hours later the animal was killed and the abdomen found to contain 100 c.c. of fluid. In another experiment the lymphatics of the liver were ligatured as they pass out of the portal fissure, and hydræmic plethora produced as before. In this case 230 c.c. of fluid were found in the peritoneum.

Since we know that the capillary pressure in the liver is largely increased in heart disease—and these experiments show that even in the normal animal an increased transudation in the liver combined with obstruction to the lymph flow causes ascites—we are warranted in concluding that the chief, if not the only, source of the ascitic fluid in this disease is the capillaries of the liver. This conclusion is confirmed to some extent by Halliburton's analyses of the ascitic fluid in different disorders. He found that in heart disease the concentration in proteids of this fluid was greater than when the ascites was due to portal obstruction or cirrhosis of the liver. We know now that a similar difference in concentration obtains between liver lymph and lymph from other parts of the body, and it is on this account that the effusion in heart disease is more concentrated than that found in other disorders. From these experiments one would expect that ascites should be one of the most constant and earliest symptoms of heart disease. I do not know how far clinical observations would bear out this conclusion.

In these lectures I have endeavoured to give a connected account of the factors which lead to the production of dropsy in consequence of the failure of the heart-pump. The views which I have put forward must, however, be regarded only as the most probable in the light of our present physiological and pathological knowledge, and it is quite possible that we may have to modify them to some extent on further investigation of the subject.

SANITARY INSPECTORS' ASSOCIATION.—The fourteenth annual dinner of the Sanitary Inspectors' Association was held at the Holborn Restaurant on March 6th, Sir John Hutton, the President, being in the chair. Among those present were the Archdeacon of London, Sir Arthur Arnold, Professor Corfield, Professor Crookshank, Mr. T. P. Teale, Dr. J. M. Rhodes, Dr. W. J. Collins, and Mr. Shirley Murphy. The chairman, in the course of the evening, said that the association was founded in 1883 and now had very nearly 700 members. Many branches had been established during last year. The association was at present giving much attention to the subjects of superannuation, fixity of tenure, and the holding of examinations which sanitary inspectors will be required to pass.

ROYAL SURREY COUNTY HOSPITAL.—The annual meeting of the Royal Surrey County Hospital at Guildford was held on Feb. 27th, the Rev. Dr. Haig-Brown presiding. The report for the year ending Dec. 31st, 1896, showed that the income for the year was £4970 and the expenditure £4280. A long discussion took place in reference to home visits which had for many years been paid to patients in Guildford by the house surgeon of the infirmary, but which had been discontinued since the end of 1896 in pursuance of an arrangement made by the governors in 1891. It seems that when the hospital was first opened it acquired the funds and took over the work of a previously existing dispensary whose members were entitled to be visited by the medical officer at their own homes in the event of their being unable to attend at the dispensary. The hospital authorities had not bound themselves to carry on home visits permanently, and in discontinuing them they were within their rights; but there now seemed to be a strong feeling in favour of the visits being resumed. In the result it was resolved to appoint a committee to confer with the municipal authorities on the subject and to consider all the aspects of the question.

The Lettsomian Lectures

ON

DISEASES OF THE NOSE AND THROAT IN RELATION TO GENERAL MEDICINE.

Delivered before the Medical Society of London,

BY F. DE HAVILLAND HALL, M.D., F.R.C.P. LOND.,

PHYSICIAN TO THE WESTMINSTER HOSPITAL, AND JOINT LECTURER ON THE PRINCIPLES AND PRACTICE OF MEDICINE IN THE WESTMINSTER HOSPITAL MEDICAL SCHOOL.

LECTURE III.[1]

Delivered on March 1st, 1897.

ANEURYSM.

MR. PRESIDENT AND GENTLEMEN, — In aneurysm of the aorta the laryngoscope is oftentimes of inestimable service in enabling the practitioner to make an early diagnosis, and consequently to allow of the institution of prompt treatment. It may be laid down as an axiom that when the left vocal cord is immobile in the cadaveric position pressure of an aneurysm upon the recurrent laryngeal nerve is the first thing to be thought of, and it is only after an aneurysm has been excluded that other causes for the paralysis of the laryngeal muscles need be considered. This is more especially the case in males between the ages of thirty and sixty years. It must be remembered that, in accordance with Semon's law, "there is proclivity of the abductor fibres of the recurrent nerve to become affected sooner than the adductor fibres, or even exclusively, in cases of undoubted central or peripheral injury, or disease of the roots or trunks of the pneumogastric, spinal accessory, or recurrent nerves," consequently the first effect of pressure on the recurrent nerve is to cause abductor paralysis on the affected side. Now, unilateral abductor paralysis presents such slight symptoms that in the absence of a laryngoscopic examination it is generally overlooked; still, numerous cases have been recorded in which this condition has been observed as a symptom of thoracic aneurysm. When, however, the adductor fibres become implicated and the cord passes into the cadaveric position the effect on the voice is so marked that the patient feels that something is amiss with him, and consequently seeks advice. In looking over the notes of sixteen private cases of aneurysm of which I have full particulars I find that they were all males, the youngest twenty-nine and the eldest sixty-one years of age, the average age being almost exactly forty-seven years. Of these sixteen cases, in one case there was bilateral paralysis of the abductors, the left vocal cord was in the cadaveric position in eight, in five there was impaired movement (loss of abduction) of the left vocal cord, and in two the laryngoscopic appearances were normal. The right vocal cord was only affected in the case of bilateral paralysis of the abductors. The proportion of cases in which the left vocal cord was partly or completely paralysed is, of course, much greater in my practice than in ordinary general practice, inasmuch as several of the patients consulted me on account of hoarseness and had no suspicion that they were suffering from any serious affection; still, this only emphasises the importance of a laryngoscopic examination in all cases of hoarseness, and, as I have said before, a loss of mobility of the left vocal cord in a middle-aged male, especially if the cord is in the cadaveric position, should at once arouse the suspicion of an intra-thoracic aneurysm. The reason why the right vocal cord is so seldom affected depends upon anatomical considerations; the right recurrent nerve winds round the subclavian artery, and is therefore situated at a considerable distance from the arch of the aorta. Should, however, the sac of the aneurysm involve the innominate artery the right recurrent nerve may be implicated, or the trachea may be displaced by an aneurysmal tumour in such a way that its convexity may press on the right recurrent and pneumogastric nerves, causing paralysis of the right vocal cord, or centripetal irritation of the trunk of the left vagus may act on the nervous centre, and through it upon the nerve-supply to the laryngeal muscles on the right side. I have found the combination of complete paralysis of the left vocal cord due to pressure on the left recurrent nerve by malignant disease, together with the existence of valvular disease and enlargement of the heart, extremely difficult to distinguish from an intra-thoracic aneurysm. In some cases it is possible to recognise the direct pressure of an aneurysm upon the trachea by means of the laryngoscope. The bulging forward of the posterior wall can be seen, and with a good light and a tolerant patient pulsation may even be distinguished.

DISEASES OF THE DIGESTIVE SYSTEM.

The possibility of chronic gastric catarrh being kept up by the irritation produced by swallowing fœtid secretion from the nose and naso-pharynx should be borne in mind by the physician who finds that his patient does not readily respond to the usual treatment. Whether as the result of the improvement of the general health or from the cessation of the local cause of irritation, I have noted that symptoms of dyspepsia have disappeared after the nose and accessory sinuses have received attention. That the stomach may be involved secondarily to the upper air passages is pretty generally agreed, but it is not so easy to prove that affections of the upper air passages may occur as a result of stomach derangements. Various theories may be propounded to explain the connexion between affections of the upper air passages and diseases of the stomach. We may appeal to the theory of reflexes or we may attribute to the ubiquitous bacillus the *rôle* of disturbing the functions of remote organs. In speaking of the treatment of granular pharyngitis in my book on "Diseases of the Nose and Throat" I say that "it is most important that attention should be paid to the general health of the patient. If there be any symptoms of indigestion these should be seen to." Further experience has only confirmed what I have therein stated, and I am convinced that the state of the pharynx is much influenced by the condition of the stomach and liver.

DISEASE OF THE LIVER.

In connexion with hepatic diseases I have only to remark that very severe epistaxis is not uncommonly an early symptom of cirrhosis of the liver, the bleeding occurring from dilated veins at the posterior part of the nose. In a middle-aged person the occurrence of epistaxis is almost as suggestive of cirrhosis of the liver as are piles. Hæmorrhages from, and ecchymoses in, the mucous membrane of the pharynx and larynx may be recognised in some cases of cirrhosis and cancer of the liver; also in acute yellow atrophy. A recent development of throat specialism is the doctrine that a varicose condition of the veins at the base of the tongue is one of the objective causes for many subjective throat symptoms of the nature of "globus hystericus." A lengthy discussion which took place in the columns of THE LANCET in the early part of last year has been the means of relegating lingual varix to its proper position. That an enlargement of the veins at the back of the tongue does occasionally exist I am quite ready to admit, but that this condition is "an etiological factor in many obscure pharyngeal and laryngeal symptoms" does not agree with my own observations. I have found that with attention to diet, the administration of saline aperients, and limiting the amount of alcohol taken the patients have speedily improved and have not required any local treatment.

BRIGHT'S DISEASE.

Epistaxis is a frequent symptom of chronic interstitial nephritis and is occasionally met with in the other forms of Bright's disease. It may be quite an early sign of granular kidney; the urine should therefore be examined in cases of abundant or frequent epistaxis. The bleeding is dependent upon the altered blood state, changes in the vessels of the Schneiderian mucous membrane, and upon the cardiac hypertrophy and increased arterial tension. The exact connexion between Bright's disease and œdema of the larynx is still a matter of discussion. The probable explanation is that Bright's disease determines the onset of the œdema in cases in which, under ordinary circumstances, the local irritation would have been too slight to have caused it.

LOCOMOTOR ATAXY.

Nasal conditions associated with tabes are rare. That

[1] Owing to the present great pressure on our space we have been reluctantly compelled to abbreviate this third Lettsomian Lecture. Lectures I. and II. appeared in THE LANCET of Feb. 6th and Feb. 27th respectively.—ED. L.

there is hyperæsthesia of the nasal mucous membrane is shown by the fact that laryngeal crises can at times be elicited by irritating the nasal fossæ. In the pharynx both the sensory and the motor nerves may be affected. All varieties of sensorial disturbance may occur—viz., anæsthesia, hyperæsthesia, and paræsthesia. On the motor side there may be paralysis or spasm with contraction. The mucous membrane of the larynx, like that covering the pharynx, may be the seat of anæsthesia, hyperæsthesia, or paræsthesia. On the motor side three kinds of affections are seen in the larynx as a result of tabes—(1) spasm of the adductors; (2) paralysis of the abductors; and (3) incoördination of the laryngeal muscles. The last mentioned of these laryngeal affections of tabes is a true ataxy of the vocal cords, and is perhaps one of the earliest laryngeal signs of tabes.

[Dr. de Havilland Hall here made short references to Syringomyelia, Paralysis Agitans, Labio-glosso-laryngeal Paralysis, and Reflex Epilepsy of Nasal Origin.]

HYSTERIA.

The neuromimetic conditions affecting the upper air passages are so numerous that I can only briefly describe some of the most important. It has been stated that a regular attack of hysteria may be produced by the irritation of certain parts of the nasal mucous membrane, the so-called hystero-genetic zones, and that after the application of the galvano-cautery to these areas the attacks have ceased to occur. Though I have been examining the interior of noses for the last twenty years, and have constantly used the probe, I have never succeeded in starting off an attack of hysteria. The motor neuroses of the pharynx may be due to spasm or paralysis. The so-called globus hystericus is nothing more or less than spasm of the pharyngeal muscles. Hysterical paralysis of the muscles of the pharynx may, by causing dysphagia, give rise to the suspicion of malignant disease, especially if the patient is middle-aged; the diagnosis is readily effected by means of the œsophageal bougie. A curious condition to which the term inspiratory spasm or perverted action of the vocal cords has been applied is occasionally seen in hysterical persons. In this affection the voice remains normal, but on attempts at inspiration the vocal cords, instead of separating, approximate in a convulsive manner. Sometimes they come in contact and cause grave interference with respiration; at other times they remain in the cadaveric position, giving rise to inspiratory stridor. Another form of spasm is the "barking cough of puberty."

NEURASTHENIA AND MELANCHOLIA.

The subject of the various reflex nasal neuroses has received much attention of late years and there has been a tendency, I think, to exaggerate the effect of the various intra-nasal lesions. As I frequently examine the noses of patients—no matter what their complaint—I have come across numerous instances of deflected septa, nasal crests, and spurs in patients in whom there is no symptom of any nasal or reflex nasal affection. On the other hand, there is no doubt that these same conditions in neurotic or neurasthenic patients would produce symptoms of a reflex character curable by local treatment in conjunction with suitable general treatment. Some patients become quite hypochondriacal as to the state of the nose and are constantly craving for an application of some kind or the other to be made to it. I have recently had under my care a lady, forty years of age, who, on account of paroxysmal sneezing, "suffered many things in the way of removal of bone, cautery, &c." She certainly lost the sneezing, but since it disappeared she has suffered from flatulent dyspepsia, acidity, intestinal catarrh, and constipation, accompanied by neuralgia and various sensations referred to the pelvic viscera. She has lost flesh, is terribly depressed, and is a typical example of neurasthenia. She dates all her present symptoms from the time she ceased to sneeze, and attributes them to the shock of the numerous and severe operative procedures carried out in her nose. Her medical man takes the same view, and I am disposed to agree with him.

HEADACHE.

There is hardly any nasal affection but has headache for a symptom. Hence a careful examination of the nose and accessory cavities should be carried out before headache is regarded as being of a neurasthenic or neuralgic origin. Chief among the nasal causes of headache may be mentioned hypertrophy of the turbinals giving rise to nasal stenosis; deflection of the septum may also have a similar effe Furthermore, I should here like to direct attention to the pain referred to the nape of the neck and the occipital region radiating towards the ear, which is met with in some pharyngeal affections.

[Dr. de Havilland Hall here referred briefly to Meningitis, Cerebral Abscess, Cerebral Hæmorrhage, and Epistaxis.]

CONCLUDING REMARKS.

I have purposely refrained from saying anything about diphtheria because the subject is too wide to be treated in an adequate manner in the time I could devote to it. Moreover, it is somewhat outside the limits I laid down for my own guidance when I commenced writing these lectures. For similar reasons I have not discussed the manifestations of tubercle, syphilis, and malignant disease in the nose and throat, as these are well described in the various text-books on the subject. The plan I proposed to myself was to group together the various affections of the upper air-passages as they may occur in connexion with general or local diseases, and also to point out the diseases of remote organs which may arise as a result of affection of the upper respiratory tract. A secondary object I had constantly before me was to accentuate the importance of a systematic examination of the nose, naso-pharynx, pharynx, and larynx. I am quite conscious that I have omitted many points of interest, but the task of selection is rendered difficult by the very abundance of material.

CHRONIC INTERSTITIAL NEPHRITIS IN CHILDHOOD.[1]

BY LEONARD G. GUTHRIE, M.A., M.D. OXON., M.R.C.P. LOND.,

PHYSICIAN TO THE REGENT'S PARK HOSPITAL FOR PARALYSIS; PHYSICIAN TO OUT-PATIENTS AT THE PADDINGTON-GREEN CHILDREN'S HOSPITAL AND THE NORTH-WEST LONDON HOSPITAL.

(*Concluded from page 688.*)

PHYSICAL SIGNS AND SYMPTOMS (*continued*).

Mental characteristics.—Children suffering from this complaint seem to be shrewd, precocious, and intelligent beyond their years. This was noted particularly in Dr. Barlow's fatal case. In my own fatal case there was a peculiar mental perversity. The patient apparently soon discovered that she was an object of interest, and did all she could to attract attention. She would scream incessantly and feign unconsciousness during the friends' visiting hour at hospital, but afterwards would confess that she knew all that was going on. She would beg that poison might be given her and disturb the whole building by her shrieks at night, but would be quiet directly she had succeeded in having the house physician called up to see her. It was difficult to ascertain whether she were actually in pain or only counterfeiting it.

I have observed in other cases that intelligence appears to be above the average. It is possible that the active cerebral circulation in such cases due to cardio-vascular hypertrophy may conduce to premature mental development. There may be more truth than W. S. Gilbert supposed in his ballad concerning the precocious child, who died "an enfeebled old dotard at five."

Cerebral symptoms.—Headache and vomiting were prominent features in four of these fatal cases. In two headaches were frequent, but there is no mention of vomiting. In one vomiting was frequent, but not headache. Vertigo and amaurosis accompanied headache and vomiting in my own fatal case. The localisation of headaches is of no value; it is usually frontal, but may be occipital, coronal, or lateral. They resemble those of migraine in their periodicity, severity, and association with visual disturbance or vertigo, and in being often relieved by vomiting. Also, at first they commonly occur on waking in the morning, as in migraine, though later they may happen at any time of the day. I

[1] A paper read before the Harveian Society of London on Nov. 19th 1896.

shall mention presently points by which they may be distinguished from other headaches. As to the cause of headaches in interstitial nephritis, in many cases they are doubtless uræmic, especially when occurring late in the course of the disease. But they may also be produced by alterations in the cerebral circulation, dependent on the increase of arterial tension which prevails. Their occurrence in the early morning may depend on sudden increase of tension in arterioles which have been previously relaxed during sleep. The later or more strictly uræmic headaches may also occur chiefly on first rising, owing to the effect of the accumulation of toxins in the blood during the night.

Vomiting may occur either with or without headaches; it may be independent of food or otherwise. It may be strictly cerebral and, like headache, produced by vascular conditions of the brain. Sometimes it seems to be purely gastric and due to congestion, catarrh, and irritability of the stomach. These are probably the causes in early stages of the disease, whilst late vomiting is, like late headache, dependent on uræmia. There can be no doubt that uræmia occurs far later and is far graver in interstitial nephritis than in parenchymatous.

Albuminuric retinitis might be expected to occur in children as in adults suffering from chronic interstitial nephritis. But it is not mentioned in any of the cases collected, and in my own patients I have never discovered it. Convulsions were prominent in two of the cases; in two they only occurred just before death; in one they were absent, death being due to gradual exhaustion; in one there were attacks of tetany and opisthotonos, after one of which the boy died comatose; and in one, recorded by Dr. Goodhart,[2] there were also attacks of tetany and cramp in the legs, but the subsequent history is unknown to me. Convulsions are, therefore, fairly common in this disease; but they are far more common, they occur earlier, and are more usually recovered from, in cases of parenchymatous than in interstitial nephritis. In adults it is not uncommon to find granular kidneys in a patient who has remained in apparent health until attacked by a series of convulsions during or directly after which he has died.

A point of interest about my own fatal case is that the convulsions were almost entirely unilateral. I do not doubt that they were uræmic, although the right side was chiefly affected. Large hæmorrhages in the right cerebral hemisphere were found after death, which probably, although not directly involving the motor tract, lowered its power of conducting impulses from the cortex downwards. A few days before death there was some transitory left hemi-paresis. Had the convulsions been due to the hæmorrhage, of course they would have affected the left and not the right side. Cerebral hæmorrhage occurred in one of Dr. Dickinson's fatal cases as well as in my own. I have not met with any other cases of hæmorrhage into the substance of the brain due to nephritis in children.[3] Cerebral apoplexy in children from any cause is, indeed, rare. It occurs in cases of purpura, commonly of scorbutic origin, but is usually then meningeal, forming the condition known as pachymeningitis hæmorrhagica. It is rarely intra-cerebral. Sometimes hæmorrhage, either intra- or extra-cerebral, is caused by rupture of miliary aneurysms of the arteries. The aneurysms themselves may be produced by syphilitic endarteritis or by weakening of the vessel wall consequent on embolism or thrombosis. During paroxysms of whooping-cough hæmorrhages into the brain or meninges or elsewhere may take place. In my own case no source of the larger hæmorrhages could be discovered, but one at least of the smaller extravasations was in the neighbourhood of a small thickened arteriole which had apparently burst. The larger hæmorrhages may have been similarly caused. The character of the symptoms rendered it unlikely that they were due to sudden rupture of large vessels.

Some cases of infantile hemiplegia or monoplegia are doubtless caused by hæmorrhage. But they are seldom fatal at the time, and when death occurs many years later all traces of hæmorrhage have disappeared, or else cysts may be found which may or may not have been hæmorrhagic in origin.

The intestinal symptoms are not peculiarly distinctive of interstitial nephritis. Sometimes the appetite is capricious or enormous, and, as already stated, there may be extreme thirst. Diarrhœa, like gastric vomiting, may be dependent on catarrh or irritability of the bowels. It is provoked by the slightest indiscretion in diet. The motions are slimy, mucous, or frothy, and at times contain blood. There may be epigastric or abdominal pain. The attacks are soon over as a rule, but when obstinate and of long standing one must suspect the occurrence of albuminuric ulceration of the bowels. Sometimes constipation alternates with diarrhœa. One of Dr. Dickinson's patients suffered before death from purulent peritonitis. I have only seen one instance of this complication. But this was in a child, aged four years, who died from general dropsy and uræmic convulsions. Parenchymatous and not interstitial nephritis was found after death, and the kidneys contained abundance of uric acid crystals. Probably peritonitis in children; as in adults suffering from chronic nephritis, occurs in a proportion of about 10 per cent. It was found in 46 out of 406 cases collected by Sir William Roberts.

Urinary symptoms.—Polyuria was noted in four of the fatal cases, as much as three, four, or even five pints of urine being passed per diem. It is probably an early symptom in all cases, but is not likely to attract attention unless, as in Dr. Barlow's patient, it is associated with enuresis. Even in adults suffering from granular nephritis the symptom is rarely made the subject of complaint—in fact, it is usually regarded as a favourable sign that urine is passed freely; diminution in quantity, on the other hand, both in the child and adult, at once excites alarm. The amount, however, shows considerable variations, and when at its lowest eclampsia is wont to occur. In my own fatal case the average amount of urine passed per diem was forty-eight ounces, but on the two days on which fits occurred the amount fell to twenty-five ounces and eighteen ounces. On the days immediately succeeding the fits the amounts were fourteen ounces and eighteen ounces, whilst on the second days following the fits the quantities rose to eighty-four ounces and 106 ounces respectively. A similar reduction in quantity of urine in association with eclampsia is noted in two other cases. Generally speaking, there is something to be said for the popular view that polyuria is a favourable sign, indicating as it does the completion of cardio-vascular compensation. Naturally, the greater the quantity of urine the greater the elimination of toxins. It is none the less an important symptom of a grave disease. Polyuria was associated with thirst in three of the fatal cases.

The specific gravity is generally low. In my own fatal case it was almost invariably 1010, occasionally 1008, and once only reached 1015. In two other cases, where it is mentioned, the specific gravities were 1004 and 1005 respectively, whilst in a third it varied between 1010 and 1020. It does not appear to be influenced by the amount of urine passed to any great extent. In my own fatal case it was 1010 when 106 ounces were passed in twenty-four hours, but only 1015 when the amount was fourteen ounces. Whilst Dr. Barlow's patient was passing from four to five pints of urine a day the specific gravity was 1015, and it only rose to 1020 when the amount had declined to three-quarters of a pint.

The albumin varies greatly in quantity. It may be entirely absent at first. Generally speaking, the amount is not large—or not so large as in cases of parenchymatous nephritis. In one only the urine is said to have become at times almost solid on boiling. This occurred during attacks of vomiting and tetany, when, instead of the usual polyuria, there was marked scantiness of the urine.

Casts in the urine are rare. They are usually of the hyaline variety, but sometimes are granular. Blood casts may occur in association with the acute exacerbations already mentioned in the course of the disease. Ordinarily there is seldom abundance of any deposit. The urine generally is clear, pale, and acid.

No statement is made as to the percentage of urea in any of these cases. In all probability it would have been found reduced below normal. To avoid fallacy it is worth remembering that children normally pass a larger relative quantity of solid matter than adults. (According to Dr. Eustace Smith the average amount passed by a child is five grains for each pound of body weight. In the adult Dr. Parkes estimates the amount as 3½ grains per pound weight.)

Pulmonary symptoms.—Children suffering from interstitial nephritis are often subject to recurrent attacks of bronchial catarrh as well as of gastro-intestinal catarrh, and may first be seen on this account. They are often somewhat breathless after exertion, but the dyspnœa is not usually extreme

[2] Keating's Encyclopædia of Children's Diseases.

[3] A third case has been reported by Filatoff in a child aged eleven years. (Emmett Holt: Diseases of Children, 1897, p. 621.)

except in the last stages of the disease, when pulmonary œdema is common. In adults the recent occurrence of attacks of spasmodic asthma in a patient who is not a typical asthmatic and who does not suffer from chronic bronchitis or heart disease suggests uræmia. Such attacks when uræmic are of extemely fatal augury. Asthmatic attacks, however, are not necessarily uræmic; the speedy relief afforded by nitrite of amyl suggests that they may be due to constriction of the pulmonary arterioles in some cases. I have not met with them in children suffering from interstitial nephritis. But my experience is limited; and as the symptoms in children in other respects precisely resemble those of adults, it is probable that children also might suffer from asthma. In adults suffering from granular kidney, pleurisy, pleuro-pneumonia, and pericarditis commonly end the scene. I have not met with such instances in children, nevertheless they may doubtless occur.

Cardiac symptoms are not obtrusive. There may be slight præcordial pain or distress on exertion. In two of my cases these were amongst the first symptoms which arose. Probably slow cardiac hypertrophy is unattended by symptoms unless it is on the point of failing.

ETIOLOGY OF CHRONIC INTERSTITIAL NEPHRITIS.

Once it was thought that all granular kidneys were simply large white kidneys in their final or contracted stage. But this cannot be so in all cases, because a large white kidney sufficiently diseased to end in contraction must have been attended by definite symptoms of severe illness, including dropsy. Yet the majority of those who die with granular contracted kidneys have not been severely ill until shortly before death and are said never to have had dropsy, and dropsy is not a condition which can be readily overlooked.

Possible scarlatinal origin.—One naturally thinks of scarlet fever in these cases. This is undoubtedly the origin in some, but in the majority there is no history of scarlet fever. Mild scarlet fever may easily escape recognition, it is true, and so may subsequent desquamation and also slight attacks of nephritis. But attacks of scarlet fever so mild as to escape recognition at the time are hardly likely to be followed by lasting progressive and finally fatal renal mischief. Even in the worst cases of undoubted scarlatinal nephritis the prognosis is generally good. Children very rarely die from it. And if the prognosis is good in the worst cases it must be better in the mildest. Otherwise, the milder the initial fever the more hopeless would be the prospect. Scarlet fever cannot be regarded as the cause of all cases of interstitial nephritis, though doubtless it is so in some.

The character of the nephritis.—Is the nephritis of an ascending character due to previous bladder trouble or obstruction of the ureters or exit of the bladder? In my own fatal case and also in the two recorded by Dr. Dickinson the kidneys were very unequal in size and the pelvis or upper part of the ureter connected with the smaller kidney were found somewhat dilated. In one of Dr. Dickinson's patients a vesical calculus had been removed many years before death, and he suggests that in both cases there may have been some bygone obstruction to the exit of urine, although no actual obstruction was found after death. Dr. Goodhart[4] was struck by the cases he had himself seen and by those recorded by others, in which a shrunken kidney was found with a dilated pelvis. He regarded the latter condition not necessarily as a proof of obstruction, but possibly merely an indication of atony of the ureter. At the same time he held that impaction of small calculi in the ureters was not uncommon in children. This is indisputable, but it is difficult to see how impaction of a calculus in one ureter should produce interstitial nephritis in both kidneys. For the affection of the two kidneys only differed in degree, and not in kind. Yet I am inclined to think that the dilatation of the ureter on the side of the kidney most contracted (though not the nephritis) may be dependent on obstruction brought about as follows: Polyuria is a marked symptom of granular nephritis. The result of this would be more or less constant fulness of the bladder with a certain amount of backward pressure in the ureters. Now if granular kidneys secrete more water than normal it follows that the more granular the kidney the more water it will secrete. Hence if any obstruction to the entrance of water into the bladder is occasioned by distension of the latter it follows that the obstruction will be most felt by the kidney which secretes most water. We may therefore get dilatation of the ureter on the side of the most contracted kidney. However, such obstruction would be secondary to nephritis, and not its primary cause.

Cystitis.—As regards their dependence on cystitis, no mention of the bladder is made in any of the cases which I have quoted, and I can only assume that it was healthy in all, as it undoubtedly was in my own.[5] Hence I must regard all the cases as being interstitial nephritis of primary nature. Dr. Dickinson gives as the causes of granular kidney gout, lead, alcohol, cardiac changes leading to renal congestion, pregnancy, obstructional anuria, mental conditions, worry, &c., perhaps intermittent fever, and "a general fibrotic tendency affecting many organs and tissues, notably the arteries and kidneys." The last I have already referred to in the section on cardiac vascular changes. Lead and alcohol may be excluded in all the children to whom reference has been made. Of the other causes we may dismiss without discussion all but the first—namely, "gout," or rather uric-acidity, which may be regarded as the equivalent of gout, in childhood.

Uric acid nephritis.—Children who have what is termed the uric acid diathesis often suffer from attacks of pain referred to the loins or especially the sites of the ureters or bladder. These attacks are commonly associated with headache or gastro intestinal disturbance. The urine is usually highly acid and of high specific gravity, irritating, and small in quantity. It contains abundant crystals of uric acid or oxalates. Often there are intermittent attacks of hæmaturia, hæmoglobinuria, or albuminuria. It is believed that the urinary symptoms are due to the passage of sharp and lacerating crystals of uric acid or oxalates through the urinary tracts, and it is certainly conceivable that a long continuance of such irritation might lead to diffuse nephritis. Dr. Eustace Smith[6] says: "In a case where a child habitually passes large quantities of uric acid I should be disposed to fear the occurrence of Bright's disease; and the occasional presence of a trace of albumin would add strength to my apprehensions." My own experience of such cases, which are common enough, is that the patients speedily get well so far as the urinary symptoms are concerned under very simple treatment. They are, however, prone to run the whole gamut of rheumatic affections, such as tonsillitis, pericarditis and endocarditis, chorea, arthritis, and peliosis. I am inclined to think that the occasional presence of blood, free or in casts, and of albumin, are purely accidental in uric acid cases, and are due, as I have said, to slight renal laceration, and are not to be taken as evidence of nephritis.[7] In none of the fatal cases of interstitial nephritis which I have collected was the passage of uric acid a feature, and in none of them is there mention of the occurrence of rheumatic symptoms. I would therefore regard cases of so-called uric acid nephritis as in a totally different category to that of true interstitial nephritis.

Primary cause of granular kidney.—Dr. Emmet Holt[8] has collected twenty-three cases of primary nephritis in infants aged between two and a half months and two years, and of these eleven were fatal. Post-mortem examinations were made in ten. In five the kidneys showed ordinary parenchymatous nephritis, but in the remaining five the conditions found were regarded as those of acute interstitial nephritis characterised by infiltration of the renal stroma by small cells in scattered areas, with sometimes formation of new connective tissue. These cases, verified by post mortem examination, prove that young infants may suffer from an acute form of interstitial nephritis. The characteristic lesions were found in one case after an illness of only three days' duration, in some after the disease had lasted several weeks. The symptoms are mainly gastro-intestinal, such as vomiting, diarrhœa, or looseness of the bowels. In many there are marked cerebral symptoms, restlessness, screaming, convulsions, drowsiness or coma, as in meningitis. High fever is common, and hyperpyrexia may occur. The symptoms are not characteristic of nephritis. Dropsy was absent in all the fatal

[4] Keating's Encyclopædia of Children's Diseases.

[5] In the Transactions of the Pathological Society, 1886, I have reported the case of an infant, aged ten weeks, in whom suppurative interstitial nephritis with dilatation of the ureters were caused by congenital malformation of the bladder and consequent cystitis.

[6] Diseases of Children, p. 757.

[7] It must be admitted that most forms of nephritis may be associated with the passage of uric acid in the urine, and after death in such cases uric acid may be found in the kidneys. Whether the uric acid is the cause of the nephritis, or only a product of disordered metabolism, dependent on the nephritis, must be left an open question. Many people pass large quantities of uric acid for a considerable portion of their lives, and appear, like birds and reptiles, none the worse for doing so.

[8] Archives of Pediatrics, 1897 vol. iv., p. 1.

cases in which interstitial nephritis was found. The condition of the urine may or may not afford a clue to the nature of the disease. The urine may often be suppressed or scanty and of low specific gravity. Albumin was found in eight of Dr. Holt's cases, in one of them only three days before death, the illness having lasted more than two weeks. In one it was only found in the bladder after death. Casts (blood and hyaline) were present in four cases. Blood and pus were present in two.

As to the causation of acute interstitial nephritis.—Scarlet fever may be fairly excluded. Dr. Holt regards its existence as non-proven in all his cases. There is no evidence that any of these were cases of secondary or ascending nephritis or that the inflammation was syphilitic or tuberculous. Primary parenchymatous nephritis, when not scarlet fever, is usually held to be due to exposure to cold. Dr. Eustace Smith draws attention to the custom of short-coating babies at an early age and thus leaving them practically naked below the armpits and exposed to chills. He regards this practice as the possible cause of infantile parenchymatous nephritis, and, if so, it may also account for the interstitial form of the disease.

It might be thought that the deep situation of the kidneys in the body would afford them protection against the effects of chill to the surface of the skin. But mere depth of covering cannot render them immune any more than other organs. Otherwise, the obese would lead a charmed life. There can be no doubt that exposure to cold will produce nephritis in one person just as in others; it may be the exciting cause of tonsillitis, acute rheumatism, pneumonia, pleurisy, or hepatitis. Probably in all cases chill to the surface vitiates the functions of the blood, thus causing either actual generation of toxins or hindrance to their elimination, or perhaps imperfect phagocytosis. The organs which are weakest in the individual will be those to suffer. We cannot predict whether it will be his tonsils, his lungs, his liver, or his kidneys, or explain why one organ should be attacked rather than another. If all are sound he may escape all ill effects. The nature of the poisons generation or non-elimination of which cause inflammation of the kidneys, as well as that of the poisons which are retained in the system in consequence of nephritis, remain unknown at present.

Granting the existence of a primary interstitial nephritis caused by chill, we can well believe that in such cases as recover from the immediate effects new connective intertubular tissue may gradually become contracted and produce in time the characteristic appearance of granular kidney. This may account for cases of renal cirrhosis of long standing even in adults in whom evidence of the other causes enumerated is wanted.

SUMMARY.

Diagnosis.—In some cases the diagnosis presents no difficulty. We must suspect the existence of interstitial nephritis in a child who is emaciated, whose skin is coarse, dry, inelastic, and pigmented; who suffers from uncontrollable periodic attacks of vomiting, vertigo, and maddening headaches. Then if we find the heart's apex displaced outwards, the left ventricle hypertrophied, the second sound accentuated, the pulse hard, the urine of low specific gravity, increased in quantity, and albuminous, the diagnosis of interstitial nephritis is complete. Yet in such a case the disease is already far advanced and the end is not far off. It is characteristic of the complaint, both in adults and children, that the symptoms do not attract attention until there can be but little hope of recovery. Hence it is of the greatest importance to discover the disease in its earliest stages. Probably wasting, gradual and progressive, is the first symptom to occur. Polyuria and thirst are also early symptoms. The first indication of polyuria may be enuresis. Pigmentation is also an early sign, though it may amount only to mere sallowness at first. A patient suffering from interstitial nephritis never looks well, although he may not complain of any symptoms. Headache, vomiting, and diarrhœa may not occur until the disease is well advanced. In all cases when suspicion of nephritis is aroused one examines the skin for dryness, coarseness, inelasticity, and pigmentation, the heart for incipient hypertrophy, the pulse for hardness, the urine for low specific gravity and albumin. When one or more of these conditions are absent others may take their place. Pigmentation may be wanting or slight in degree, but anæmia, with rough, dry skin, will be found. On the other hand, pigmentation, when the skin remains moist, smooth, and supple, is rather suggestive of true Addison's disease than of adrenal disease secondary to Bright's. But in true Addison's disease the heart is not hypertrophied and the pulse remains feeble and soft throughout, whereas in interstitial nephritis cardio-vascular hypertrophy and high arterial tension are almost universal. Yet cases of interstitial nephritis may run their course without apparent thickening of the heart or vessels. When this is so there may still be albuminuria to guide us. With cardio vascular hypertrophy are usually associated headaches, increasing quantity and low specific gravity of the urine, but there may be no albumin. In adults, when compensating cardiac hypertrophy fails and gives way to dilatation, the urine usually is reduced in quantity, becomes albuminous, and dropsy appears. But in children suffering from interstitial nephritis dropsy is very rare, yet it may occur and may be the first symptom, together with scanty, smoky, and albuminous urine which draws attention to the disease. The condition of the skin and vascular system will serve to distinguish such attacks from those of ordinary acute nephritis. The differential diagnosis in these cases is most important. The absence of albumin, even after frequent and systematic testing, does not exclude the possible existence of the disease. Albumin may only occur occasionally or not till late. Hence the importance of frequent and systematic testing for its presence.

History of infantile nephritis.—Some help towards the diagnosis may be gained from a past history of a tedious gastro-intestinal complaint in a child who has remained emaciated, cachectic-looking, and with easily disturbed digestion ever since. The significance of violent periodic headaches, especially if associated with vomiting or vertigo, and occurring in the early morning, is very great. Like convulsions, they may not appear until the last stage of the disease is at hand, but whenever they do occur urinary symptoms or cardio-vascular changes will almost certainly be present to aid the diagnosis. The somewhat similar attacks due to cerebral tumour may be distinguished from them by being less periodic than chronic, with exacerbations and by the presence of optic neuritis. Probably there will also be other nervous symptoms and conditions, such as paralysis or focal epilepsies, which will make the diagnosis of tumour certain. Wasting is in cases of cerebral tumour rare, except in the latest stages, unless the tumour is part of general tuberculosis; whilst in interstitial nephritis it is, I believe, universal. Headaches due to local conditions of the eyes, nose, throat, ears, and teeth are easily identified. Headaches due to simple anæmia, constipation, and general debility require no comment. Migraine headaches may at times be difficult to distinguish from those of interstitial nephritis, but they are unaccompanied by permanent cardio-vascular and urinary changes. Uric acid headaches may resemble those of interstitial nephritis, and the diagnosis may be further obscured by the occurrence of temporary attacks of hæmaturia and albuminuria and also by the cardiac enlargement often present in those of the so-called uric acid diathesis. But the presence of uric acid or oxalate crystals in the urine sufficiently accounts for the hæmaturia and albuminuria and does not *per se* indicate interstitial nephritis. The enlargement of the heart dependent upon valvular disease or pericarditis met with in uric acid or rheumatic cases may be distinguished from that which forms part of the cardio-vascular changes of interstitial nephritis by the presence or history of other rheumatic signs and symptoms, such as tonsillitis, arthritis, appendicitis, peliosis, and chorea.[2] The distinction is important, especially in the case of pericarditis, as this complication is, I believe, speedily fatal in adults suffering from granular kidney, and would probably be so in children, whereas the immediate prognosis of ordinary rheumatic pericarditis in children is fair. Pulmonary symptoms in the interstitial nephritis of children are probably the same as in adults. Slight dyspnœa and attacks of bronchial catarrh may first lead the patient to seek advice. Pulmonary œdema in late stages of the disease may mark the onset of uræmic convulsions. In either case the patient's appearance, heart, pulse, and urine will serve to distinguish such attacks from those of the ordinary pulmonary affections of childhood. Finally, it may be said that the symptoms of interstitial nephritis are as

[2] The permanence and fixed locality of the bruits in ordinary valvular disease will distinguish them from the temporary and shifting murmurs met with in commencing failure of the hypertrophied heart in interstitial nephritis.

insidious and gradual as the morbid process itself. In many cases we can only suspect the existence of the disease. It may be months or even years before such suspicions prove to be well founded or set at rest.

Prognosis.—Interstitial nephritis may go on for many years without causing the patient or his friends to think there is much amiss. The typical granular kidney must require a very long time to arrive at its condition. It is even possible that in an adult it may date from an attack of acute interstitial nephritis occurring in infancy. Yet the duration of the symptoms of which complaint is made rarely exceeds a few years, and may be only a matter of months or even weeks. In one of the fatal cases collected symptoms had lasted three weeks. In two the duration was three months, and in three symptoms had been observed for two, three, and five years respectively. As I have endeavoured to show, the effects of cardio-vascular hypertrophy are to avert, or at all events to compensate, for those of renal disease. Dropsy is reduced or is prevented by the circulatory changes, and uræmia by the polyuria which occur. Cardio-vascular compensation attains its height in interstitial nephritis, and the onset of symptoms depends to a great extent (1) on the failure of such compensation, and (2) on its being carried to excess. In adults failure and dilatation of the heart and degeneration of the bloodvessels are often the chief causes of the fatal symptoms. But in children and also in adults they may be actually due to excess of cardio-vascular compensation. Thus may be produced the violent headaches for which advice is often first sought. Extremely high general tension due to constriction of arterioles, combined with a powerfully acting heart, may cause hæmorrhage or cerebral apoplexy. Constriction of pulmonary arterioles may give rise to dyspnœa, asthma, or pulmonary apoplexy, or in the extremities it may cause Raynaud's disease or gangrene, whilst constriction of renal arterioles when carried to excess may, instead of increasing the amount of urine, actually reduce it, and so bring about uræmia as well as further damage to the kidneys. So the prognosis will largely depend on the degree at which cardio-vascular hypertrophy is maintained and on our ability to aid or thwart its progress as required. Bad signs will be commencing heart failure, headaches, vomiting, dyspnœa, with diminution of urine, increasing albuminuria, progressive wasting, and pigmentation. It is needless to point out that the prognosis will be more grave when symptoms of Addison's disease are superadded to those of interstitial nephritis. The surroundings of the patient and his liability therefrom to chills and consequent inflammations so often fatal in this disease must be considered in the prognosis. Finally, although the conditions of heart, pulse, skin, and urine make the existence of the disease evident, life may not be endangered unless signs of failing or of excessive cardio-vascular compensation arise. In the first case the child is no better off than the adult—both are doomed; but in the second case treatment may ward off danger for the time.

Treatment.—The treatment is symptomatic rather than curative; yet it is rational and follows the lines of pathology laid down. In parenchymatous nephritis, when dropsy threatens or is present and cardio-vascular hypertrophy is slow to occur and at first insufficient, we give digitalis, squill, and citrate of caffein, which are not only powerful heart tonics, but also have a constricting effect on the arterioles and thus promote diuresis. The utility of ergot and cantharides may be similarly explained. Citrate and acetate of potash become converted into alkaline carbonates in the "primæ viæ," and Brunton, Cash, and Gaskell [10] have shown that the effect of alkalies is to contract bloodvessels, whilst that of acids is the reverse. Bi-tartrate of potash is also a remote antacid. If it be true, as I have contended, that dropsy is averted or cured by constriction of arterioles and increased cardiac force, we can understand that the use of such drugs is rational. In interstitial nephritis, on the other hand, cardio-vascular compensatory hypertrophy is carried out to perfection, and this, together with consequent polyuria, prevents dropsy and also uræmia from occurring. Hence these drugs—cardio-vascular tonics—are not called for in interstitial nephritis, unless cardio-vascular compensation fails. But it must be admitted that nature's endeavours to cure are at best imperfect. Cardio-vascular hypertrophy may be carried to excess in interstitial nephritis. Thus may be produced headaches or even apoplexy by rupture of vessels owing to excessive tension, dyspnœa and possibly asthma by constriction of the pulmonary arterioles, Raynaud's disease and gangrene by constriction of the arterioles in the extremities, and, above all, uræmia by suppression of urine due to constriction of the renal arterioles. The treatment commonly followed in such cases is rational. We lower arterial tension and relieve the heart by giving vascular depressants such as nitro-glycerine, nitrite of amyl, nitrites and nitrates generally; we promote elimination from the skin by warm or vapour baths, liquor ammoniæ acetatis and other diaphoretics, and from the bowels by hydragogue cathartics. Similar treatment is followed in cases of parenchymatous nephritis where pulse tension is high and the heart threatens to give way owing to the obstruction in front. This is the "cardio-vascular depressant" as opposed to the "cardio-vascular excitant" mode of treatment. It is logically combined with catharsis and diaphoresis. So the treatment of interstitial nephritis in some cases consists in counteracting the effects of excessive cardio-vascular hypertrophy and at the same time promoting the action of the skin and bowels in order to compensate for deficient elimination through the kidneys. In the later stages of interstitial nephritis, however, the whole system of cardio-vascular compensation tends to fall through, and then we must have recourse to the cardio-vascular excitants which are so useful in the early stages of parenchymatous nephritis. Possibly when supra-renal inadequacy is indicated by the presence of pigmentation, treatment by supra-renal extract may be of use, and this extract has also an extreme power of constricting vessels, which therefore may be beneficial in another way. The general conduct of the case aims at prevention of complications arising from chill by supplying suitable clothing and, if possible, climate. As to other complications: iron is always necessary to combat progressive anæmia; dyspepsia due to gastric congestion and irritability is best treated by bismuth, arsenic, and prussic acid; eclampsia may be checked by inhalation of chloroform or by rectal injection of chloral and bromides. Headaches may also be relieved by the latter taken internally, but free purgation is the most rational mode of treatment. Venesection is, I believe, both useless and dangerous in the late eclampsia of interstitial nephritis in children. Catharsis and diaphoresis are the best methods of depletion. Dry-cupping, however, may be useful in pulmonary œdema, pleurisy, and pericarditis. Finally, no drug can cure a damaged kidney. Sooner or later the morbid process going on must end in death. Treatment at best can only be palliative, yet by it we may hope to stave off the evil day, and I am convinced that the guiding principle should be—"Watch the heart and pulse."

Upper Berkeley-street, W.

[10] Brunton: Disorders of Digestion, 1886 edition, p. 343.

A REVIEW OF THE OPERATION FOR EXCISION OF THE KNEE, TOGETHER WITH AN ACCOUNT OF A NEW PROCEDURE—OSTEOPLASTIC EXCISION OF THE KNEE.[1]

BY C. B. LOCKWOOD, F.R.C.S. ENG.,

ASSISTANT SURGEON IN ST. BARTHOLOMEW'S HOSPITAL, SURGEON TO THE GREAT NORTHERN HOSPITAL.

IN this communication I propose to describe an operation for excision of the knee which I have performed on several occasions since 1889. Although the operations are not numerous, yet they are enough to show that the proceeding is quite practicable. Moreover, I hope to prove that it has certain advantages over the usual operation. At the outset it is to be understood that it is not to be done in every case of tuberculous arthritis of the knee. On the contrary each should be treated on its merits, and with regard to the kind and degree of the disease, and to the condition and environments of the patient. Thus, during the past ten years I have treated tuberculous arthritis of the knee by rest and local applications, by drainage, by arthrectomy, by the

[1] A paper read before the Medical Society of London on March 8th, 1897.

ordinary excision, and by the operation which I am about to describe. The last was done upon cases of progressive tuberculous arthritis with pulpy synovial membrane and ulceration of cartilage, but with little caries or displacement of the ends of the bones. Before deciding to operate every effort was made to allay the disease by rest and local applications. But it is important not to delay until sinuses have formed. In the last case a sinus had formed, and the operation was followed by a severe outbreak of septic inflammation. As with most new attempts, errors have been made and failures have occurred. All of these will be clearly pointed out for the guidance of anyone who may be encouraged to imitate my example.

The method of excision which I always see performed, and which is described by all our more recent writers,[2] has certain faults which can be overcome. To these are attributable some of the ill results by which it is not infrequently followed. For instance, during the last few years I have had three times to remove wedges of bone to straighten limbs which had become flexed and rotated after the knees had been excised by the ordinary method. That operation is briefly as follows. A flap of skin and subcutaneous tissue is lifted from the front of the knee by a curved incision; then the capsule and the internal and external lateral ligaments are divided and the patella is taken away, with division of its ligaments; next, the crucial ligaments are cut and a slice or slices of the articular ends of the femur and the tibia sawn off; and, in addition, the synovial membrane is taken away. Abroad von Esmarch,[3] von Bergmann,[4] and others[5] describe the same operation, as do also Ollier[6] of Lyons and Farabeuf.[7] A number of others have been described, but as a rule they only differ from one another in the way in which the joint is opened or in the treatment of the patella. Farabeuf[8] gives no less than six different incisions, and others might be added. However, no operation seems to enjoy the same repute as that which I have just sketched and called the usual operation.

With regard to the ordinary operation I would remark that the mere skin incision is of small importance, provided it fulfils the first of the principles upon which the operation is founded and therefore permits the whole disease to be removed. Sometimes I have used the so-called antero-internal vertical incision of Langenbeck,[9] because it seemed to give better access to the supra-patellar pouches and to spare the patella and its ligament. But it was found to have the disadvantage of not thoroughly exposing the posterior angles of the joint, especially that behind the outer condyle. So of late the transverse or semilunar incision has been used. But the indiscriminate removal of the patella is a much more serious matter. It brings about the destruction of the attachments of the quadriceps extensor femoris and is one of the main causes of the flexion to which I have just referred. As Sir Charles Bell has pointed out, a peculiar harmony pertains to the contraction and relaxation of opposing groups of muscles. When one group is weakened or destroyed the other being unopposed distorts the limb. Sometimes the patella may be too diseased to be kept, but even then the aponeurosis over it and at either side of it can be preserved. When the patella is sound it ought to be kept for another reason. In one case I was able to peg its sawn surface to the joints of the tibia and femur, both of which had been sawn to receive it. The ligaments, too, perform important functions. In extension of the knee, as is well known, they are all on the stretch and keep the femur and the tibia in the closest contact and prevent rotation. The crucial ligaments are particularly important. They obviously prevent displacement of the tibia backwards and forwards. Also, in extension, as Bruce Young[10] has shown, they screw home and lock the tibia and femur. The lateral ligaments assist the crucial ligaments and combine with them to bring about that rigidity and immobility for which the extended knee is remarkable. Obviously in the ordinary operation all this is quite ignored. The shape of the articular ends of the femur and tibia are accessory to this screwing home and locking. And, in addition, the spine of the tibia, being fitted into the inter-condylar notch of the femur, effectually prevents lateral displacement of the tibia when the knee is extended. It is hardly necessary to say that the usual operation of resection of the knee sacrifices all the advantages which may be secured by leaving the patella and its ligament, the lateral ligaments, and the crucial ligaments, or by preserving the interlocking of the articular ends. Moreover, it leaves bony surfaces which, besides being unsupported by ligaments, are themselves flat and smooth and easily displaced.

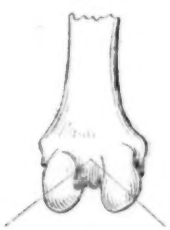
To obviate the disadvantages of the usual operation and to retain the advantages which the arrangements of the ligaments and articular ends afford I have, in suitable cases, performed the following operation. First, the knee being bent at half a right angle, a transverse or slightly curved incision is carried across the centre of the ligamentum patellæ, from one tuberosity of the femur to the other. The ligamentum patellæ is divided and the joint opened. As I have already said, opening the joint by the vertical incision at the inner side of the patella was tried, but was given up because it made the removal of all the synovial membrane difficult or perhaps impossible. This quite outweighs the advantages of the vertical incision. Some surgeons have exposed the interior of the knee by sawing through the patella. But this was not done in any of the cases, because that bone is often tuberculous and because it does not unite with so much certainty as the ligament. Moreover, the divided patella is not adapted for fastening to the tibia and femur. The knee-joint having been freely opened and bent to a right angle the extent of the disease is ascertained. Then the synovial membrane is removed with knife and scissors as carefully as if it were full of malignant disease. Sometimes to get at the upper part of the synovial membrane the ends of the transverse incision have had to be carried upwards. If any synovial membrane be left behind tubercle is likely to grow in it; also it is apt to inflame and secrete fluid which may accumulate and become septic. In removing the synovial membrane it is convenient to leave the part behind the condyles until the femur has been sawn. As the synovial membrane is taken away the ligaments come into view. Healthy ligaments are to be preserved. Whether it is always right to keep both the crucial ligaments remains to be seen. It is certainly very hard to remove all the synovial membrane without cutting the anterior. Nevertheless, as I have pointed out, the crucial ligaments help very powerfully to hold the tibia and femur together; the posterior one prevents the tibia falling backwards as the leg lies extended on the bed; after the ordinary excision there is a tendency for the tibia to fall backwards. Fortunately the posterior crucial ligament can often be preserved and is of service in preventing that accident. The anterior crucial ligament prevents displacement of the tibia forwards, and is therefore less important; it has hardly anything to do with backward displacement. But it would be better to destroy one or both crucial ligaments rather than leave any diseased synovial membrane behind. This was shown by a case in which my anxiety to preserve the crucial ligaments led me to leave behind some synovial membrane which quite spoilt the operation. The patient was a sailor with tuberculous disease of the knee. The disease in the synovial membrane was extensive with considerable ulceration of the articular cartilages. The ligaments were kept; the wound healed by first intention, and he went in six weeks to a convalescent home with the limb in plaster. He had, of course, strict injunctions not to walk on the leg. A month or so afterwards he came back and complained that his leg hurt him when he walked about on it. It was clear from the swelling that the tuberculous process was still progressing, although the union was wonderfully firm considering what he had been doing. My colleague, Mr. Peyton Beale, in my absence, kindly removed the tuberculous disease, which he told me was quite at the back of the joint, behind, I believe, the crucial ligament. The ultimate result in this case was highly satisfactory.

The internal and the external lateral ligaments, being outside the joint, are much easier to save. In the next stage of the operation, after the femur and the tibia have been sawn, these ligaments are of the greatest use in keeping the bones firmly together. So far the operation

[2] Jacobson: The Operations in Surgery, third edition, 1897, p. 184 et seq. Treves: A Manual of Operative Surgery, 1891, vol. i., p. 684. Marsh: Diseases of the Joints and Spine, 1895, p. 331.
[3] The Surgeon's Handbook, 1888, p. 317.
[4] Operations-Cursus, Berlin, 1892, p. 170.
[5] Allgemeinen und speciellen Chirurgie, Pitha und Billroth, 1882; Article by Lossen, p. 31.
[6] Traité des Résections, 1891, tome iii., p. 206 et seq.
[7] Précis de Manuel Opératoire, p. 775.
[8] Loc. cit., Figs. 592 to 595.
[9] See Farabeuf, p. 791, Fig. 593.
[10] R. B. Young on the Grooves Separating the Patella from the Menisco-tibial Surfaces of the Femur, and on Locking of the Knee-joint in Full Extension. Memoirs and Memoranda in Anatomy, by Cleland, Mackay and Young, 1889, p. 147.

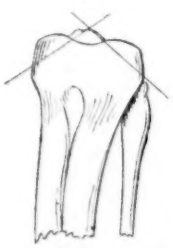
has hardly differed from many others; but in the next step—namely, the treatment of the bones—it is quite different from any I have been able to find described. First, the articular surface of the patella is sawn off and, if necessary, its cancellous tissue is gouged. Then the trochlear surface of the femur is sawn off, leaving a flat surface upon which the upper part of the patella fits. The femur itself is next raised vertically by the assistant and the greater part of its articular surfaces taken away by two saw cuts which begin at the convexity of the condyles at the edge of the articular cartilage. These saw cuts are carried obliquely into the intercondylar notch of the femur until they converge, entering the notch at the edge of the articular cartilages and below the attachments of the crucial ligaments (*vide* Fig. 1). In making these cuts the lower part of the rather extensive attachment of the crucial ligament cannot always be saved, but as the upper attachments spread out a good deal the greater part can be saved. The antero-posterior plane of these cuts should be at right angles to the axis of the femur. By these saw cuts a deep notch is made in the femur, leaving some articular cartilage in the front and back of the condyles. This cartilage is either torn off or removed with a sharp spoon or gouge. The tibia is treated upon the same principles as the femur. With a narrow saw two oblique cuts are carried upwards from the epiphysial line to converge at the base of the spinous process (Fig. 2). Here, again, the articular cartilages can be removed

FIG. 1.



Showing section of femur.

FIG. 2.



Showing section of tibia.

without destroying the lower attachments of the crucial ligaments. This is quite feasible because these structures occupy but a small area of the upper surface of the tibia in front of and behind the spine; indeed, the posterior is attached to the posterior surface of the tibia in the popliteal notch. This stage of the operation is easily accomplished without destroying the lower attachments of either the external or of the internal lateral ligaments, the latter being attached down the shaft of the tibia quite out of harm's way. The antero posterior direction of the plane of these saw cuts is at right angles to the axis of the tibia; their obliquity should correspond to that of the sawn surfaces of the femur.

The advantages which may be claimed for this method of sawing the femur and tibia are as follows. The original fitting of the tibia into the intercondylar notch is preserved and any lateral displacement of the tibia is still impossible. Further, the same wedging in of the tibia effectually prevents rotation of that bone upon its long axis, and, therefore, the foot falls neither inwards nor outwards. To these advantages may be added that large areas of sawn bone are brought in apposition, and this with the smallest removal of either epiphysis. The whole thickness of the femoral epiphysis is left at either side and the whole thickness of the tibial in the middle. If the knee be extended after the bones have been sawn, the benefit of preserving the ligaments becomes apparent. As the leg is extended they become tight and jam the wedge of the tibia into the notch in the femur. Here it is firmly fixed so long as extension is maintained. As I have pointed out, if the crucial ligaments can be preserved a further advantage is gained, because in extension the posterior prevents the tibia falling backwards and the anterior prevents its displacement forwards. The operation is finished by sewing together the ligamentum patellæ with buried silk sutures and by subsequently closing the wound. In one case the patella was fastened with ivory pegs to the femur and tibia, but lately this has been omitted. The patella seems to form very strong connexions without the pegging. The front of the tibia and the front of the femur were wired together in one case so as to prevent flexion. Afterwards the limb is kept for a month or six weeks on a Gant's splint. But after this operation the immobility which is so essential for success is much easier to preserve. Indeed, as the tibia cannot slide to either side or backwards and cannot rotate, we have only to guard against flexion. That movement is one of the easiest to prevent and has little tendency to occur if the patella has been preserved and its ligament sutured. When the limb comes off the Gant splint it is put into a leather splint. A patten having been put on the sound foot the patient goes about on crutches swinging the resected limb. I have hitherto advised that this treatment be continued for a year, but perhaps this time might be shortened.

I have been unable to learn that any surgeon has performed a resection of the knee at all similar to that which has just been described. Mr. Treves[11] remarks that "Dr. Fenwick of Montreal saws both femur and tibia in a curved line, so as to make them fit together more closely and accurately than they would do otherwise." The bones have been sawn in all kinds of ways[12]—obliquely by Billroth, in a kind of zigzag by Albert, and the exact reverse of that which I have described by Sédillot. However, none of these methods seem to be based upon the principle of attempting to retain the original fitting of the bones and the action of the ligaments.

The operation which has just been described has been done four times since 1889. A youth who was operated on in 1889 was earning his living three years afterwards and his father wrote: "He gets about freely and does not complain of it in any way; it is filling out very nicely and straight." Mr. Mark Taylor, writing about a youth operated upon in April, 1896, says that now "the leg is in very good position; no pain or tenderness anywhere." The photographs which Mr. Taylor sent certainly bear out the statement as to the position of the limb and also show that it is exceedingly well developed. In a third case done nearly a year ago the patient has a good and straight limb, but I doubt whether the union is yet bony. She had a septic sinus at the time of operation and the wound suppurated. The fourth case was, as I have already said, a comparative failure, because I did not thoroughly remove all the synovial membrane about the crucial ligaments and behind the condyles. This omission evidently needs to be particularly guarded against.

So far this operation seems to me to have the advantage of treating the bones so as to make it much easier to keep their cut surfaces in contact and at rest; no lateral movement or rotation is possible. Also, under favourable circumstances no falling backwards of the tibia can occur; next, the growth of the epiphyses is less interfered with; and, finally, the ultimate result is a very solid synostosis, with hardly any tendency to flexion. To gain these advantages the patient runs no risks beyond those of the usual operation.

Upper Berkeley-street, W.

A CASE OF ACTINOMYCOSIS TREATED BY IODIDE OF POTASSIUM.

BY COLVIN B. M. SMITH, M.B. DURH.

IN view of the facts that three cases of actinomycosis, treated by iodide of potassium at the Bristol Royal Infirmary, have been recently recorded[1] and that there has been some discussion as to the efficacy of the drug as a specific for this disease, the following note of a case may be of interest. A man, a farm-servant, aged twenty-seven years, consulted me on Dec. 7th, 1894, about a swelling in the cheek which caused him pain and prevented him from opening his jaw properly. He first noticed in October, during the harvest time (in Aberdeenshire) a small lump, "like the head of a pin," on the side of his neck, behind the lobe of the ear. This lump, he said, was moveable and could be pushed up and down under the skin with his finger. This increased in size

[11] Treves: Operative Surgery, vol. i., p. 692.

[12] Allgemeines uber Resectionen, Handbuch der Chirurgie. Pitha und Billroth, 1882, p. 193.

[1] THE LANCET, Jan. 30th, 1897, p. 311.

steadily, so at last he sought medical advice. His condition was as follows. There was a hard swelling under the zygoma, extending downwards for about an inch and outwards below the ear for about an inch. The skin over the tumour was slightly red, and there was pain on pressure. He was unable to open his mouth more than half an inch, and therefore it was almost impossible to ascertain the condition inside, but, so far as could be seen, there was neither carious tooth nor wound of any kind. He was recommended to stay at home, to apply poultices, and to take one drachm three times daily of the syrup of iodide of iron. During the next three days the swelling increased and became more painful, and on Dec. 10th the patient was almost unable to open his jaws. The syrup disagreed with his stomach and was discontinued, and iodide of potassium ointment was used externally. On the 11th the swelling, which appeared to be travelling downwards, showed signs of fluctuation, so an incision was made, but only a little blood came away and very slight relief was obtained. No improvement followed during the next few days, and the mouth could not be opened wide enough for the tongue to be protruded. On the 17th the abscess was opened below the lobe of the ear, and a good deal of pus was obtained, in which no granules were noticed. The inflammation descended along the course of the sterno-mastoid towards the clavicle; and on the 27th another incision was made below the angle of the jaw. The pain was now constant, and the jaws were closed. On Jan. 9th, 1895, the swelling had descended to the clavicle, leaving behind an indurated track of a purplish-red colour, with inflamed lymphatic vessels extending up the neck. An incision was made above the clavicle, and a copious flow of pus resulted, in which nothing special was noticed. It was not until three days later that I, while dressing the neck and syringing the sinus with boracic lotion, noticed, in a bad light, several yellow granules. On questioning the patient, he told me that several days previously, while changing the dressing, he had "squeezed the lump in his cheek with his fingers," to relieve itching, and that "scores of bright yellow little lumps dropped down on to the floor." During the next few days the patient was much better and several granules were obtained. On Jan. 20th, however, the inflammation had increased, there was a copious discharge of pus, and the last opening was surrounded by an intensely red erysipelatous area. The patient was ordered to take fifteen grains of iodide of potassium three times a day. After this date there was no further extension of the inflammation and on the 28th the discharge had ceased, though the sinus was still open, and the indurated track from the cheek to the clavicle was easily felt. After this the improvement was continuous and the dose of iodide of potassium was gradually decreased and finally stopped. On Feb. 7th the patient was quite well. The sinus was closed and the incisions were healed, and the induration along the track of the inflammation was the only mark of the disease. This gradually faded and there was no recurrence.

In the first two cases at the Bristol Royal Infirmary the exact period of incubation is given, and was in each case about fourteen days. In my case no date could be given for the actual inoculation, but in all probability it occurred during the harvest (which is late in Aberdeenshire), and the period of incubation may be calculated at about two or three weeks. Dr. W. B. Ransom mentioned [2] that in Germany 77 per cent. of cases of actinomycosis occurred between the months of August and January, and Dr. Septimus Gibbon noted the prevalence of the disease during damp seasons. The harvest of 1894 in Aberdeenshire was a particularly wet one. With regard to the treatment, the cure was either spontaneous or the result of the exhibition of iodide of potassium. If it was spontaneous it is at least curious that it should have occurred, after months of no improvement, coincidently with the exhibition of the iodide of potassium. The iodide of potassium ointment seemed to be useless—probably it was not absorbed. I may mention that the patient declined to permit any surgical treatment.

Strichen.

[2] Proceedings of the Royal Medical and Chirurgical Society, November, 1891.

QUEEN CHARLOTTE'S HOSPITAL.—The Cloth-workers' Company have sent a donation of £250 in aid of the extension and improvement fund of Queen Charlotte's Lying-in Hospital, Marylebone-road.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF ŒDEMA OF THE LUNGS IN CHILDREN TREATED WITH STROPHANTHUS.

BY A. MACGREGOR, M.D. ABERD.,
ASSISTANT PHYSICIAN TO THE NORTH LONDON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

THE sudden and unexpected development of œdema of the lungs in the first case, and the gravity of the symptoms and the rapid and satisfactory action of strophanthus in both cases, may invest with sufficient interest the following notes to merit a place among the clinical memoranda of THE LANCET.

CASE 1.—A boy, aged seven years, suffered from chronic pleurisy and peritonitis. During the first six weeks in which he was under my care the temperature oscillated between 98° and 102° F. Suddenly œdema of the lungs developed, there was distressing dyspnœa, the pulse-beats numbered from 156 to 172 per minute, and the temperature rose to 103·8°. He was given carbonate of ammonia and tincture of digitalis in mixture, with the result that the frequency of the pulse was slightly diminished, but the general condition was not only not improved, but much worse. On May 1st, lividity of the face was very marked and the orthopnœa was most distressing. The pulse-rate was 144, the respirations 70, and the temperature 102°. The mixture of carbonate of ammonia and digitalis was discontinued, and one minim of tincture of strophanthus given every four hours. On May 2nd the pulse-rate was 132, the respirations 54, and the temperature 101° in the morning and 99° in the evening. The dose was increased to two minims every four hours. On May 3rd the pulse was 120, and the respirations 44; the morning temperature was 99°, and the evening temperature 99·4°. On the 4th the pulse was 108, and the respirations 36; the morning temperature was 98°, and the evening temperature 98·5°. On the 5th the pulse was 110, and the respirations 30; the temperature was 97·8°. On the 6th the pulse was 108, and the respirations 26; the morning temperature was 97·6°, and the evening temperature 98·5°. On the 7th the pulse was 100, and the respirations 24; the temperature was 98·5°. The lungs had now almost completely cleared up, the lividity and dyspnœa disappeared, and from the very acute pulmonary œdema the patient rapidly recovered.

CASE 2.—A girl, aged nine years, was seen by me for the first time on Nov. 9th, three weeks after the onset of an attack of scarlet fever. The skin was desquamating, there was general anasarca, the face and lips were very livid, there was orthopnœa with incessant, short, distressing cough, the lungs were water-logged, and there was considerable effusion into the pericardium; the pulse-rate was 164, the respirations 74, and the temperature 102° F. No urine had been passed for some time. Two minims of tincture of strophanthus were given every three hours; brandy was also given, and jacket poultices were applied to the chest. On Nov. 11th urine amounting to about four ounces was passed for the first time, the bowels also acting at the same time. The patient was easier, the cough was now only occasional, and the œdema of the lungs was found to be passing away. The pulse was 128, the respirations were 52, and the temperature 101°. The dose of strophanthus was increased to three minims every three hours. On Nov. 12th the pulse was 60, respirations 30, and the temperature 99°. The strophanthus was reduced to two minims every six hours. On the 13th the pulse was 76, respirations 28, and temperature 99°. On the 14th the pulse was 64, respirations 22, and temperature 100°. The first specimen of urine obtained for examination was found to contain numerous blood corpuscles, and blood and epithelial casts. The quantity passed daily continued to increase. On Nov. 16th twenty-nine ounces were passed; the specific gravity was 1014, and there was only a trace of albumin. The pulse-rate was then 60, and the strophanthus was discontinued. The patient made a rapid and complete recovery.

Harley-street, W.

ACUTE PEMPHIGUS (?), AND EPIDEMIC ACUTE ECZEMA.

BY DR. JÓN JÓNSSON (OF REYKJAVIK),
GOVERNMENT MEDICAL OFFICER IN ICELAND.

IN THE LANCET of Oct. 31st, 1896, an unusual lesion of the skin was described (on page 1212) by Dr. James Priestley, who further mentioned that he was in hopes of obtaining suggestions as to the diagnosis from those who had experience of similar cases. Dr. Priestley's patient presented numerous large bullæ over the greater part of the body, most of them on an erythematous base, and some on normal skin; there was high fever; and death occurred after the symptoms had continued for about five and a half days. Just a year ago I had a case in which the lesion of the skin was apparently very similar, although the illness followed a milder course. The patient was a man, fifty years of age, and came under my care on March 22nd, 1896, a week after the beginning of the eruption. The vesicles were at first small, but in a few days developed into large bullæ, which measured from an inch to an inch and a half in diameter and spread themselves over the whole surface of the body, being confluent in various places. Both scapular regions were totally denuded of epidermis, and presented a raw surface about 18 cm. (7¼ in.) long and 10 cm. (4 in.) wide. In the iliac and inguinal region there was a band encircling the body, from four to five inches wide, totally denuded of epidermis and ulcerated. It was quite impossible to find on the body a place as large as the palm of the hand free from bullæ except on the legs, ankles, and feet, the eruption being more scattered there than elsewhere. The edges were inflamed, but there was no infiltration of the skin except on the right knee, where I applied carbolic acid lotion, with the result that the growth of the vesicles was stopped and healing followed, with desquamation of the epidermis at the infiltrated place. On the first evening of my attendance the temperature was 39° C. (102·2° F.) and the pulse 100. During the ensuing eight or nine days the temperature varied between 38·5° and 41° C. (between 101·2° and 105·8° F.), the latter being the highest temperature which was noted; the pulse ranged between 100 and 130. The eruption was copious on the hairy scalp and there were several vesicles on the tongue, but there was no pharyngitis. I estimate that an area extending over more than two-fifths of the whole surface of the body was denuded of skin. After this date the fever rapidly diminished, repair of the skin commenced, and in from sixteen to eighteen days all the ulcers were healed. The patient was a healthy man of a full habit of body; he had passed through an attack of typhoid fever some time before. There was no other case associated with this one, and the cause of the illness was unexplained.

Dr. Paul of Nagasaki, Japan, writing in THE LANCET of Feb. 13th, 1897 (p. 437), referred to Dr. Priestley's article, and described a case observed by himself in 1894, in which an infant suffered from acute pemphigus and acute eczema of the face, the two diseases being intercurrent, but independent in course. In connexion with this subject I may add that in the years 1893–94 Iceland was visited by an epidemic of acute eczema of the face, or contagious impetigo, especially attacking young persons and children. Many of the infants affected with the eczema suffered also from severe dermatitis with large bullæ on all parts of the body except the head. These two diseases—the eczema on the face and the pemphigus on the body—were apparently distinct; most of these cases terminated fatally.

A CASE OF SUPERFŒTATION.

BY H. W. MILLS, M.R.C.S. ENG., L.R.C.P. LOND.

As superfœtation is undoubtedly a very rare occurrence—the mere possibility has been denied by some authorities—it is advisable that all apparently genuine cases of this abnormality should be recorded.

On Sept. 2nd, 1896, I was called to a woman, aged forty-two years, who was reported to have had a miscarriage. She had only had one previous pregnancy, which resulted six months previously in a three months' abortion. On examination I found a piece of umbilical cord projecting through the external os; the internal os just admitted one finger. I removed piecemeal the placenta, which was firmly adherent. I then turned my attention to a vessel full of blood-clots passed before my arrival, and discovered a fœtus of about sixteen weeks old and also a perfectly fresh healthy ovum of about seven weeks. This case much resembles one recorded by Dr. Tyler Smith, quoted by Dr. Galabin,[1] and, as in that case, the woman had had periodical discharges of blood, three in number, though she cannot be certain whether or no they correspond in point of time with what would have been her ordinary menstrual periods. Such cases as these do not, of course, conclusively prove the possibility of superfœtation, for they are open to the explanation that the younger fœtus—though apparently quite fresh and healthy—may have been retained dead without decomposition for two months or so; but I think the evidence points rather to the former than to the latter explanation, and affords about as strong proof as we are likely to get under the circumstances. It is difficult to see what should have caused the death of the younger fœtus; there was no history of syphilis on either side; moreover, "the struggle for existence" cannot be so very severe at seven weeks. The uterus in this case was not double.

Ruardean, Gloucestershire.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum allorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

LONDON HOSPITAL.

CARCINOMA OF THE RECTUM; KRASKE'S OPERATION; RECOVERY; REMARKS.

(Under the care of Mr. FREDERIC EVE.)

THIS operation has not yet obtained that position in the estimation of the profession which its advantages entitle it to possess. The idea of cutting through the sacrum in order to get at the rectum appears to many as such a formidable procedure that they hesitate to recommend it in the early stage of disease when it can be carried out most satisfactorily, and perhaps only give it a trial when the patient himself demands it because his sufferings are becoming more than he can bear. Heidenhain considers that "the only local contra-indication to the operation is the extension of the growth to the prostate, bladder, or ureter."[2] There can be no doubt, however, that if the loose connective tissue about the rectum is involved the case is very unfavourable, as it also is if the retro-peritoneal glands are affected. Dr. Allison states that "the reported cases of excision of the rectum after Kraske's method for cancer show a mortality of 30 per cent., with a recurrence in 40 per cent. of the recoveries. This includes, however, many inoperable cases, as is proved by a mortality of 8 per cent in the hands of some surgeons in properly selected cases."[3] Senn writes "that the surgeon who removes the cancer of the rectum by excision will have a great mortality, while the one who follows the loose connective tissue spaces, resorts to blunt instruments, and carefully guards against hæmorrhage will show the best results."[4]

A man, aged fifty-one years, broken down and prematurely aged, was admitted to the London Hospital with advanced cancer of the rectum. The disease occupied the upper part of the bowel and could just be reached by the finger. The affected area was evidently adherent anteriorly, although not firmly. There was no evidence of enlargement of the liver. The patient's attention had first been drawn to the trouble by the passage of blood and watery discharge commencing two months previously. His condition was

[1] Manual of Midwifery, pp. 263, 264.
[2] Jackson Clarke: THE LANCET, Jan. 16th, 1897, p. 152.
[3] Sajous's Annual of the Universal Medical Sciences, 1896, vol. iii. D 6.
[4] Ibid.

explained to him and that it might be impossible to remove the whole of the disease; but he expressed an urgent wish that an attempt should be made, and it was therefore decided to perform Kraske's operation. On April 9th, 1896, a preliminary inguinal colotomy was done in the usual way. On May 12th (the patient's general condition having meanwhile improved) Kraske's operation was performed, Heinecke's incision being adopted. A vertical cut was made from the coccyx upwards over the middle of the sacrum; this was joined by a horizontal incision at the level of the third sacral foramina. The sacrum and coccyx were then divided with the saw in the middle line as high as the horizontal incision, and the lateral sacral wings severed with the chisel just below the level of the third foramina. The two osseous and cutaneous flaps were then turned aside and the rectum exposed. An attempt was made to separate the rectum from the bladder by dissection and with the finger, but failed on account of intimate adhesions. The lower part of the incision was therefore prolonged around the anus, and the separation of the bowel was commenced from below upwards. The carcinoma was found to extend above the level of the reflection of the peritoneum. This was divided, and after a sufficient extent of the meso-rectum had been severed between ligatures the whole of the diseased portion of the bowel was readily brought down into the wound. Above the growth a ligature was passed around the bowel, which was divided below it. The surface to which the growth was adherent was thoroughly scraped and cauterised and the opening into the peritoneal cavity closed with sutures. The rectal stump was fixed to the skin at the upper part of the wound, the divided surface of the sacrum united by sutures passed through the periosteum, and the wound in the integuments closed. Subsequently the sutures attaching the rectal stump to the skin gave way and the stump became retracted, thus opening up the large cavity from which the bowel had been excised. This required packing with iodoform gauze, but the cutaneous incisions united by first intention. The patient is now doing his work, and is much improved in health. A slight fistula discharging mucus remains at the point where the stump of the bowel was attached to the integument.

Remarks by Mr. EVE.—The operation bears out all the advantages claimed for it by its advocates. There was very little loss of blood after the first incisions were made. The field of operation was fully exposed to view. An extensive and adherent mass of carcinoma occupying the first part of the rectum was apparently completely removed. The hollow of the sacrum could be thoroughly explored for infected glands. It can scarcely be doubted that the preliminary colotomy was a wise precaution in consideration of the seat and extent of the disease, and condition of the patient's health. The progress of the above case contrasts favourably with one reported by me in the Transactions of the Clinical Society of London for 1887. In this five inches of the rectum were removed through the ordinary anal incision, the reflection of the peritoneum being divided all round. This allowed the bowel to be very freely brought down. Some time afterwards the patient was admitted to the hospital in my absence with chronic obstruction, and died unrelieved. The post-mortem examination showed that the obstruction was due to adhesions of coils of small intestines to the cicatrix in the pelvis. This would not have occurred had it been possible to suture the opening in the peritoneum. It is noteworthy that there was no recurrence of the disease *in situ* and no secondary growths existed in the liver. I may say, in conclusion, that I would in future perform one or other of the modifications of Kraske's operation in place of the old operation, except for disease limited to the lowest portion or for circumscribed recent growths quite at the lower part of the middle portion of the rectum.

THE CENTRAL LONDON OPHTHALMIC HOSPITAL.—The annual meeting of the Central London Ophthalmic Hospital was held on Feb. 25th, Mr. J. Stamford Burrows presiding. The report showed that during 1896 there were 197 in-patients; there were also 10,520 out-patients, who made 26,200 attendances. The total income received for general purposes during 1896 was £1171, and the expenditure was £1174; the corresponding figures for 1895 were £887 and £929 respectively. Owing to the great increase in the number of the patients there was an urgent necessity for an enlargement of the buildings; a building fund had therefore been opened and £2046 had been received, but a further amount of £15,000 would have to be raised.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Clinical Bearing of some Experiments on Peritoneal Infections.—Removal of a large solid Tumour from the Retro-peritoneal Space.

A MEETING of this society was held on March 8th, the President, Dr. HOWSHIP DICKINSON, being in the chair.

Mr. HERBERT DURHAM read a paper on the Clinical Bearing of some Experiments on Peritoneal Infections. He referred first to the researches of Issaef, who had shown that a considerable degree of general resistance against pathogenic microbes was afforded by inducing leucocytosis. It was found that if sterilised water or broth or serum was injected into the peritoneal cavity on the preceding day the animal could take with impunity fifteen times the ordinary lethal dose of a culture of cholera vibrios. The protective effect was much increased if serum from an animal immunised against the cholera vibrio was employed. Mr. Durham, experimenting on these lines, had succeeded in protecting guinea-pigs by sterile injections of nutrient broth against bacterium coli, bacillus pyocyaneus, bacillus prodigiosus, and bacillus typhosus. The protection was due to two factors—(1) increased bactericidal power of the peritoneal fluid after injection, and (2) the presence of a very large number of active phagocytes which are not seen in normal peritoneal fluid. Mr. Durham suggested that an attempt might be made to afford protection in man before operations through the peritoneum in such cases as perityphlitis, tubal abscess, and the like, in which there was some chance of pus getting into the peritoneal cavity. In the majority of cases the active organisms were streptococci, and he thought it would be advisable to protect the peritoneum with anti-streptococcic serum the day before proceeding to open the abdominal cavity. The bacterium coli appeared to be much less potent in the production of peritonitis than was often taught. Mr. Durham pointed out that there might be no lymph and no organisms present in the peritoneal fluid in cases which died rapidly, but that in the lymph spaces of the omentum and other peritoneal membranes abundant organisms could be demonstrated. The injection of anti-streptococcic serum would not only increase the general resistance of the tissues, but would afford specific immunity against streptococcal invasion. Mr. Durham then drew attention to the treatment of general suppurative peritonitis and insisted on the importance of thoroughly cleansing the omentum and the space between the liver and the diaphragm, as microscopic examination showed that it was there that organisms were most thickly aggregated.—Mr. C. B. LOCKWOOD agreed that all the ordinary naked signs of peritonitis might be absent at the necropsy, and yet examination microscopically would reveal masses of organisms in the lymphatics. There was undoubtedly a great difference in the course of the disease according to the organisms present, and the streptococcal forms were much more virulent than those due to the bacterium coli. Owing to the multiplication of the microbes in the substance of the membranes, and not on their surface, it was practically impossible to dislodge them, and if Mr. Durham's plan of preparing the tissues to resist their entrance proved to be efficacious it would be a very valuable expedient.—Mr. HARRISON CRIPPS said that it was curious that in those cases where fœtid pus escaped into the peritoneum during an operation the more severe forms of peritonitis were very rare. Possibly the previous existence of the pus in close contact with the peritoneum had some protecting effect. He did not see how the washing out of the space between the liver and the diaphragm was to be carried out, as it was so high and the surfaces were in such very close apposition.

Mr. MARMADUKE SHEILD read a paper on the Removal of a large solid Tumour from the Retro-peritoneal Space. The patient was a woman, fifty-two years of age, who was the subject of complete uterine prolapse. There was a large abdominal tumour passing up from the pelvis almost to the ensiform cartilage. It was soft, elastic, and semi-fluctuating, and was believed to be ovarian. When laparotomy was performed there were many lamiæ of condensed fibrous tissue in front of the tumour which had to be stripped off the tumour, which was found to be lying in front of the spine,

but was readily separated from the aorta and vena cava. The tumour was definitely encapsuled, but was firmly adherent to the bladder. Owing to the rapidity with which the operation had to be performed the exact relations of the tumour could not be accurately made out. There was an extraordinary number of adventitious adhesions containing large vessels. The tumour proved to a fibro-myoma when examined by Dr. Rolleston. The exact origin of the tumour was not easy to determine. It might be a sub-peritoneal fibroid which had become detached from the uterus and formed new attachments or it might have grown from the unstriped muscle found in the broad ligament and the root of the mesentery. Most of the recorded cases had been fibro-lipomata, so soft as to give rise to a diagnosis of ascites. Sarcomata also occurred. The diagnosis was usually one of extreme difficulty. Often the intestines became so flattened by pressure that it was not possible to obtain resonance over the colon which lay in front of the tumour.—Mr. F. S. EVE thought that the tumour originated in the unstriped muscular tissue which was found at the root of the mesentery. He had examined a tumour removed from this situation by Sir Spencer Wells, which proved to be a fibro-lipoma.—Mr. LOCKWOOD remarked that sarcomata in this position were usually encapsuled and showed little tendency to infiltrate locally, and that their removal was easy unless they were very soft. He thought that an important point in diagnosis was the occurrence of varying areas of resonance over the colon.—Mr. HARRISON CRIPPS agreed that there was very little tendency for retro-peritoneal tumours to infiltrate and they were less apt to recur than those in other parts. He thought that many of them grew from the broad ligament and were not, strictly speaking, retro-peritoneal. He thought that probably in this case the tumour was originally a detached uterine fibroid. In operating on such cases the surgeon was often embarrassed by the number of adhesions that he had to cut through, so that he did not know whether he had got down to the peritoneum. In those circumstances it was best to follow Sir Spencer Wells's plan and extend the incision upward, and to get into the peritoneal cavity higher up; it would then be easy to get one's bearings.

MEDICAL SOCIETY OF LONDON.

Excision of Knee.—Intestinal Neurosis.

A MEETING of this society was held on March 8th, the President, Mr. REGINALD HARRISON, being in the chair.

Mr. C. B. LOCKWOOD read a paper in which he reviewed the operations for Excision of the Knee and described a new procedure—Osteoplastic Excision. The paper will be found printed in full on page 732 of this issue.—Mr. MARMADUKE SHEILD thought the operation would prove to be a good one, as it appeared satisfactorily to resist the tendency to lateral displacement of the knee which often caused the surgeon to be disappointed with the result of his operation. Such displacement might occur even twelve months after the operation, and was most liable to occur among hospital patients, who could not carry out the prolonged rest which was essential, and the operation, therefore, would be especially useful for such patients. Complete fixation was an absolute necessity, and he thought that Howes' splint, which allowed the dressings to be changed without removal of the splint, answered all purposes. In performing Mr. Lockwood's operation great care would have to be taken that no disease was left behind in the condyles or in the patella.—Mr. STANLEY BOYD said that in young subjects he had performed arthrectomy in preference to excision because injury to the epiphysis was thus avoided. In Mr. Lockwood's operation the whole of the epiphysis was not removed, and it would be interesting to observe whether the portion of the epiphysis left would be sufficient for growth. He did not think there was much advantage in retaining the action of the quadriceps: complete fixation was best. He preferred Thomas's splint to the limb being fixed in position with sterilised bandages before the dressing was applied. He was accustomed to fix the bones by two two-and-a-half inch carpenter's screws. There was no satisfactory explanation why bony union was so difficult to obtain. He suggested that it was owing to the injury being almost confined to the bone, the periosteum being hardly implicated.—Mr. G. R. TURNER pointed out that Senn had found a method based on the same principles successful in obtaining union in ununited fracture.—Mr. LOCKWOOD, in reply, said that it was useful to preserve the quadriceps, because it prevented the flexion which was otherwise apt to occur. He thought that Howes' splint was admirable for many purposes, but he did not think that any splint was effectual in keeping the surfaces in perfect apposition unless the hip-joint was also controlled, and he considered that a splint should reach up to the axilla and prevent the patient sitting up in bed.

Mr. CLINTON DENT read a paper on some cases of Intestinal Neurosis, especially with regard to the question of surgical interference. The first case was that of a man, thirty-five years of age, who had suffered from symptoms attributed to internal stricture of the small intestine, extreme wasting, and severe epigastric pain occurring at a regular interval after food. When he was placed under an anæsthetic a swelling the size of a sausage could be felt above the umbilicus. An exploratory incision was made, but nothing was found. All the symptoms disappeared and the patient completely recovered. The second case was that of a young man, twenty-seven years of age, who commenced with symptoms pointing to renal calculus. The kidney was explored; nothing was found, but the renal symptoms disappeared. A few weeks later, however, he was seized with attacks in which he had headache and pains in the thighs; his temperature rose to 103° F., he had rigors with profuse sweating, and frequent vomiting. A swelling like a thick cord could be felt occasionally in the right iliac fossa. On opening the abdomen the only structural alteration that could be made out was a small adhesion between the cæcum and omentum. But either from the manipulations or exposure to the air the first few inches of the colon were seen to contract into a rounded mass, which had no doubt been the cause of the intermittent swelling felt in the iliac region. Only temporary relief was given to the symptoms by breaking down the adhesions. Afterwards relief was afforded by washing out his stomach, but at the present time symptoms had returned and closely simulated biliary colic. The third case was that of a man, fifty years of age, who had attacks in which he was seized with pain in the right ischium, which quickly radiated over the whole abdomen. This was followed by copious eructations and often by vomiting. There was no evidence of organic disease, and all the symptoms were relieved by abdominal massage. In many cases these symptoms were associated with some lesion which by itself would be insufficient to cause them, as in the case of a man, admitted for syphilitic brain disease, who was suddenly seized with abdominal pain, &c. The stomach was found on operation to be bound down by adhesions. These were freed, but as the symptoms persisted pyloroplasty was performed. The relief, however, was only temporary, and he still has very frequent vomiting, which appears to have very little effect on his general health. Purely functional cases showed a great tendency to relapse, and he thought that laparotomy, unless there was clear evidence of organic trouble, was inadvisable.—Mr. MARMADUKE SHEILD thought that the recovery from symptoms of renal calculus by operation when no stone was found was due to the squeezing of the kidney during the operation. The cases described by Mr. Dent were very puzzling, as it was difficult to know how much weight to attach to the symptoms. Sometimes hysterical manifestations might make one overlook evidence of organic disease. He quoted the case of a young woman who was admitted to St. George's Hospital suffering from pain, wasting, and almost constant vomiting, which was at first believed to be neurotic. On exploring the abdomen, however, the peritoneum was found studded with tubercles, and there was a band which bound down the jejunum. When this was relieved the symptoms disappeared and complete recovery followed.—Mr. LOCKWOOD thought that there was often some actual disease present. In one case in which he explored for calculi in the gall-bladder and found everything apparently normal, he thought now that there might have been some duodenal ulceration.—The PRESIDENT referred to the extensive train of nervous symptoms which are sometimes associated with a varicocele of inconsiderable size, which could not be directly due to the physical conditions present.

HARVEIAN SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on March 4th, the President, Dr. R. H. MILSON, being in the chair.

Dr. G. A. SUTHERLAND showed a girl eleven years of

age suffering from Tachycardia and Cyclic Albuminuria. There were other disturbances present in connexion with the heart and the kidneys, but he considered that they were functional rather than organic in origin.—The PRESIDENT stated that he had a patient whose pulse had averaged from 128 to 130 beats in the minute, and frequently reached 140, for the last ten years. Although he had seen many physicians, the cause of the quickness had never been determined.—Dr. COCK mentioned a case of a healthy woman, aged thirty-six years, whose pulse was normally 100, and that this quickness had persisted after an attack of puerperal septicæmia from which she suffered ten years ago.

Mr. JACKSON CLARKE showed a child, aged five years, who had a Marked Lateral Deviation of the Spine to the Left in the Dorsal Region. There was a slight deformity present at birth, and this had become worse during the first two years of life owing, he believed, to the child having suffered from rickets. At the end of this time the case came into the hands of Mr. John Poland, who had applied the splint (Chance's), which Mr. Clarke demonstrated. No further deviation had occurred since the splint had been worn. The importance of recognising and treating rickety curvature of the spine, whether it took the more usual form of a single posterior incurvation or the less common lateral deviation, was emphasised.—Mr. NOBLE SMITH remarked that the case of lateral curvature shown by Mr. Jackson Clarke was probably due to rachitic softening of the vertebræ, but such cases were rare. The pathology of lateral curvature had not yet been satisfactorily described. He could not adopt the view that weakness of muscles alone was the usual or at all a common cause. Only 1 or 2 per cent. of the cases which he had seen were clearly rachitic, and the softening and relaxation he referred to were due to some other pathological condition or to excessive rapidity of growth. Sometimes lateral curvature occurred in young people whose muscles were well developed, and he showed photographs of such cases in youths whose muscles were obviously strong. He also showed photographs of cases of lateral curvature in which a condition of osteoporosis existed. In discussing the treatment Mr. Noble Smith urged that the popular treatment by exercises alone was only suited to those few cases which were hysterical or very slight, and that for the very large number of patients who suffered from real lateral curvature mechanical help was necessary, and if judiciously applied was always successful. The splint which Mr. Jackson Clarke had shown, and which was used at the City Orthopædic Hospital, was very efficient. It was constructed upon quite different principles from those devised by instrument makers. These principles of construction demanded not only mechanical knowledge, but also the whole knowledge of the surgeon. By the use of this apparatus the muscles were encouraged to act, instead of being interfered with; the chest was developed, not depressed; and the shoulders were drawn backwards, not pressed up by crutches. In very weak patients the strength of the spine was insufficient at first to tolerate special exercises; but by means of this support the ordinary exercises of play and movement were freely permitted, while the spine was prevented from falling into wrong positions. The result was that when the patient had been made straight and subsequently had grown strong the apparatus could be thrown aside without fear of a relapse. In some cases exercises in addition to the mechanical support were of great benefit, and massage and hand pressure were also valuable remedies.

Mr. E. W. ROUGHTON showed: 1. A case of Sacro-iliac Disease which had been completely cured by scraping out the joint. The chief symptom of disease in the case was a cold abscess which formed over the dorsal aspect of the joint, and when the latter was opened it was found to be completely disorganised. 2. A case of Congenital Deformity of both Hands in a woman. The three central digits were shortened. A skiagram showed that the shortening lay in the metacarpals and not in the phalanges.[1]

Mr. SEFTON SEWILL showed a young woman in whom he had treated an Empyema of the Antrum by making an opening through the alveolus of a molar or bicuspid tooth and exhibited the instruments he employed. In cases where he removed a tooth immediately before operation he found the three sizes of trocars shown all that was necessary to perforate. In edentulous cases spear-headed drills driven by the dental engine were a great assistance, indeed, almost indispensable. He next described the drainage apparatus, consisting of a gold tube of as large calibre as possible, its lower orifice being closed by a split pin during mastication. This tube fixed to a gold plate held *in situ* by bands round adjacent teeth provided efficient drainage, and had this advantage, that a patient could syringe out the antrum without removing the plate and tube.—Dr. PEGLER, Dr. HILL, Dr. SCANES SPICER, and others discussed the case.

[1] We have received these skiagrams from Mr. Roughton, and I ope to publish them shortly.

OBSTETRICAL SOCIETY OF LONDON.

Exhibition of Specimens.—President's Inaugural Address.—Cyclical or Wave Theory of Menstruation.

A MEETING of this society was held on March 3rd, Dr. C. J. CULLINGWORTH, President, being in the chair.

A letter of condolence on the death of Sir Spencer Wells from the Berlin Obstetrical and Gynæcological Society was read.

Mr. W. DUNCAN showed five Fibromyomata removed by abdominal section.

Mr. A. F. STABB showed a Uterus with Interstitial Fibroid removed by abdominal hysterectomy in a young woman aged twenty-six years.—The PRESIDENT and Mr. ALBAN DORAN made remarks.

Dr. CULLINGWORTH then gave his Inaugural Address on the Undiminished Mortality from Puerperal Fever in England and Wales, which was published in full in THE LANCET of March 6th.

Dr. W. S. PLAYFAIR moved a cordial vote of thanks to the President for his most interesting and instructive address, and said he could conceive no topic more useful or one more likely to have a beneficial effect.—This was seconded by Dr. CHAMPNEYS and carried unanimously.

Dr. ARTHUR E. GILES read a paper on the Cyclical or Wave Theory of Menstruation, based on observations on the temperature and the pulse before, during, and after menstruation. The temperature observations embraced fifty menstrual periods in forty-five patients; from the fifty cases a composite curve had been drawn up, which might be regarded as the type of the temperature curve in relation to menstruation. It showed that the temperature was lowest at the middle of the inter-menstrual period; it gradually rose, attaining its maximum two days before menstruation. There was a sudden drop on the day preceding the flow, with a second slighter drop at the end of the period. It rose slightly for the first week after the cessation of menstruation, and there was a third fall at the beginning of the inter-menstrual period. The observations of Jacobi and Reinl had been similarly employed in the construction of composite curves; these present features similar to those shown by Dr. Giles's curve. As regarded the pulse, sphygmographic tracings had been obtained from seven patients, covering nine menstrual periods and forty observations. They show that the blood pressure was greatest on the first two days of menstruation and on the day preceding; it was lower during the remainder of the period, rising again slightly after its cessation. The total variation, both in temperature and pulse, was comparatively limited. Dr. Giles then discussed the bearing of these facts on the cyclical theory of menstruation, and concluded that this theory as ordinarily stated was insufficient as an explanation of the origin of menstruation. But, taken in a modified form, the cyclical or periodic theory might be accepted as giving a connected idea of the meaning of menstruation, which might be regarded as the conclusion of the reproductive phase of an alternation of nutritive and reproductive activity or, in other words, as a repeated preparation for the reception and nutrition of a fertilised ovum. In the absence of such an ovum menstruation occurred as a "missed pregnancy."

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

An Apparatus for Preventing Talking during Sleep.—Copper Amalgam as a Filling Material.—The Dissolubration of Copper Amalgam.

AN ordinary meeting of this society was held at 40, Leicester-square on March 1st, Mr. J. FAIRBANK (Vice-President) being in the chair. The minutes of the previous meeting were read and confirmed.

Mr. ROBBINS mentioned the case of a patient who applied to him for an apparatus which would interfere with his articulation and so prevent him talking in his sleep, for being a Government official and having to live in a bungalow where the partitions between the sleeping rooms were very thin he was afraid he might divulge some official secrets. Mr. Robbins explained and exhibited the appliance he had made, and stated that the result produced was most satisfactory.

Mr. J. H. BADCOCK read a paper on Copper Amalgam as a Filling Material, its merits and demerits. He remarked that it possessed the advantage of working smoothly and adapting itself perfectly to every part of the cavity, the shrinkage so common with most amalgams being in all probability entirely absent. Its supposed power of arresting caries by virtue of its antiseptic action was of no practical utility, and should be absolutely disregarded as being without clinical significance. Referring to the disadvantages of copper amalgam, he thought the most important was its tendency to "waste," more especially near the gum margin, with the result that caries recurs, and is frequently not discovered until the pulp of the tooth is exposed. The great tendency to discolouration was also an important disadvantage, and for this reason he considered that it should never be used in any tooth when staining would be objectionable. The opinions of various writers, both in this country and America, were quoted, Mr. Badcock giving a most concise and complete *résumé* of the whole question.

Mr. KENNETH GOADBY read a paper on the Discolouration of Copper Amalgam. He first dwelt upon the supposed antiseptic properties of copper amalgam and enumerated researches he had undertaken in this connexion. Plates of agar and gelatin were inoculated and small pellets of amalgam dropped on them. In the gelatin plates, three in number, a development of bacteria took place right up to the filling, and practically the same condition was seen in the agar plates. A series of tubes of broth, saliva, and gelatin were also inoculated with cultures (1) from the mouth direct; (2) with streptococcus brevis; and (3) with impure cultures from the mouth. In all cases development of bacteria took place. His results, therefore, seemed to point to the fact that copper amalgam has practically no antiseptic action. With regard to the black discolouration of copper amalgam Mr. Goadby stated that it was due to the formation of copper sulphide, and recounted the following experiments he had made in connexion with this point. Several tubes of saliva were taken and small pellets of amalgam dropped in; a solution of sulphuretted hydrogen was next added and the tubes placed in a chamber at the body temperature, within a short space of time the familiar sooty appearance was to be seen. Upon gently rubbing the black deposit a shiny surface was exposed, due no doubt to the mercury set free, and on again placing the amalgam in the solution the black sooty layer appeared. The "green" stain seen in connexion with copper amalgam was also referred to, Mr. Goadby recounting several experiments he had made with the object of discovering the actual cause of the colouration, and stated that as the result of his investigations he had no reason to suppose that the staining was due to copper sulphate as supposed by some. It, however, seemed probable that it was due to a salt of the nature of an amide.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

The Housing of the Insane and the Size of Asylums.—Exhibition of Cases.

A GENERAL meeting of this association was held at the Borough Asylum, Mapperley hill, Nottingham, on Feb. 18th, under the presidency of Dr. JULIUS MICKLE.

Dr. RAYNER opened a discussion on the Housing of the Insane and the Size of Asylums. He drew attention to the fact that the number of patients housed in county and borough asylums in England and Wales had increased from 15,844 in 1859 to 63,957 in 1896, the increase since 1892 having been 8448, an average of more than 2000 per annum. He thought it was desirable, in the interests of the insane and of the community, to consider whether some improvement might not be made in the plan which now obtains of aggregating vast numbers in one building, by adopting plans of segregation in the degrees in which they may be useful and practicable. He divided the insane into the following groups: (1) the acute or hospital class; (2) the asylum class; (3) the employed or employable class; and (4) the helpless or workhouse class, with a terminal group—the infirmary dement. He considered success in treatment to be evidenced not only by the percentage of recoveries, but by the proportion of those who have improved so far as to be trusted with a great share of liberty. He considered skilled individual attention to be the basis of treatment, but that no amount of experience and skill will enable a physician to give the requisite attention to more than a certain number of cases, the amount of attention required varying greatly with the different groups. Individuality of responsibility is the corollary of individuality of attention, and should be delegated largely to assistant or deputy physicians. He considered that what was needed for London was not a lunatic hospital, but receiving houses or infirmaries, or even special wards in connexion with general hospitals, in which cases not yet certified or certifiable could be received for treatment, and from which, if necessary, they could be sent to the asylum. He considered that with adequate preventive treatment in the stage preceding the certifiable condition a certain proportion of cases might be saved from becoming bad enough for asylum treatment. He advocated also the further development of the colony system and of "boarding out" in suitable cases as a means of relieving our growing institutionalism. He concluded: (1) that the defect in the provision of treatment in the earliest stages of mental disorder was utter and complete; (2) that the defect in dealing with the improved or occupation class was very great indeed; (3) that the helpless workhouse class were massed in too great numbers and were too much isolated from their friends; (4) that the responsibility for treatment was not sufficiently and clearly delegated when the insane were treated in large masses; and (5) that the number of medical attendants was too limited. He considered that an establishment under one director should be made up as follows: a male and female side, each having a hospital for 200 beds, an asylum of from 300 to 400 beds, with farm or occupation colonies for 500 or more distributed over an estate of 1000 acres or more and with annexes for the helpless imbeciles and terminal dements, supplemented by a special organisation for developing "boarding out" in town or country. Each of these divisions should be under a physician absolutely responsible for the treatment of the patients under his charge, aided by junior assistants, but supervised by the physician-director. The line of advance in the treatment of the insane at present should be summarised as a need for "more brains and fewer bricks."

A discussion ensued in which the PRESIDENT, Dr. E. WHITE, Dr. THOMSON, Dr. SPENCE, Dr. MCPHAIL, Mr. HAYES NEWINGTON, Dr. MERCIER, Dr. CLAPHAM, Mr. ALEXANDER, Mr. EVAN POWELL, Dr. KAY, and Dr. T. W. MCDOWALL took part.

Dr. VINCENT and Dr. MONTGOMERY showed cases of interest from the wards of Mapperley-hill Asylum.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.

A CLINICAL meeting of this society was held on March 5th, Mr. W. BRUCE CLARKE, the President, being in the chair.

Dr. CLIPPINGDALE showed a boy, aged ten years, who suffered from Congenital Ichthyosis. The areas of skin free from the disease were the front of each elbow, the back of each knee, and the face and neck.

Dr. C. W. CHAPMAN showed a man, aged forty-one years, with Aneurysm of the Thoracic Aorta.

Dr. H. P. POTTER showed a man, aged fifty-six years, with a Sarcoma of the Upper Jaw. The growth had been observed for about nine months. It measured five inches from side to side and four and three-quarter inches from above downwards. The sub-maxillary glands were slightly enlarged.

Mr. MCADAM ECCLES showed a man, aged fifty-two years, who had had his left Superior Maxilla removed for Sarcoma. The glands at the angle of the jaw were removed at the same time. The patient made a good recovery after the operation.

Mr. SWINFORD EDWARDS showed a man, aged fifty years, with Papillomatous Dermatitis around the Anus. The disease had lasted for four months. There were no signs of syphilis in other parts of his body. The anus was entirely surrounded by papillæ.

Dr. SEYMOUR TAYLOR showed:—1. A boy, aged fourteen years, with Hydrocephalus. The head began to enlarge at the age of seven months, continuing until the tenth year. The left side was more enlarged than the right. He had signs of a descending lesion affecting the crossed pyramidal tract on either side of the spinal cord. He was fairly intellectual. He had a lateral spinal curvature. 2. A boy, aged eight years, with Congenital Spastic Paraplegia. His parents were healthy. There was no history of forceps delivery. He had rigidity of both the upper and lower extremities, especially the latter. There were also flexion and adduction with increase of deep reflexes.—Remarks were made by Dr. W. S. COLMAN, Mr. MCADAM ECCLES, and Dr. SHUTTLEWORTH.

Mr. KEETLEY showed (1) a case of Congenital Dislocation of the Hip-joint after operation, and (2) a man from whom he had removed a Mammary Sarcoma.

Mr. L. A. BIDWELL showed a man, aged forty-six years, from whom he had removed an Epitheliomatous Tumour of the Abdominal Wall. The patient first noticed a pimple on the abdomen twelve months ago, which had gradually increased in size.

Mr. SWINFORD EDWARDS showed a man, aged thirty-two years, from whom he had removed a Renal Calculus.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

Different Varieties of Aortic Regurgitation.—Exhibition of Cases.

A MEETING of this society was held on March 3rd, Dr. W. B. RANSOM, the President, being in the chair.

Dr. HANDFORD read a paper upon the Different Varieties of Aortic Regurgitation, and emphasised particularly the essential difference between those in which the lesion was stationary and those in which it was progressive, as well as the difference between the rheumatic and the atheromatous cases. The chief characteristics of the rheumatic cases were: (1) the disease came on at a much earlier period of life than atheroma, and was the main cause of aortic regurgitation arising between the ages of five and thirty-five years; (2) the arteries were generally sound; (3) the heart muscle was comparatively sound; and (4) apart from fresh attacks the valvular disease soon ceased to be progressive. In all these respects rheumatic aortic regurgitation differed essentially from the atheromatous, and the prognosis was very much more favourable. Not infrequently free regurgitation might exist for years with a complete absence of symptoms, even though the patient led an active life. The atheromatous cases were by far the most numerous and serious, and presented the following distinctions: (1) the disease was essentially a degeneration and arose in middle life, rarely before the age of thirty-five years, except where syphilis was the main cause; (2) the arteries were always involved to a considerable extent; (3) the heart muscle was rarely sound; (4) the disease was almost always progressive; and (5) it affected the male much more frequently than the female. Of the atheromatous cases there were four chief sub divisions, according to the mode of production: (1) the syphilitic, arising generally between the ages of thirty and fifty years, affecting sometimes mainly the aorta and branches, and sometimes mainly the valves, difficult to distinguish from fusiform aneurysm, and rapidly progressive; (2) those arising from laborious work in strong, muscular men, generally between the ages of forty and fifty years; (3) the arterio-sclerotic, arising between the ages of fifty and sixty-five years in the gouty and in men who habitually ate and drank too much, especially when combined with hard mental work; and (4) cases arising from "old age," about seventy years. No general rule could be laid down for all cases as regarded the use of digitalis. It was most useful where there was consecutive mitral disease with dropsy, next in the rheumatic cases and those arising from laborious work; the latter could often be enabled to continue their work by daily doses of digitalis. The chief cause of failure of compensation was degeneration of the ventricle from fibroid change, the prognosis of which depended mainly upon the degree of occlusion of the coronary arteries. When the fibroid change was advanced digitalis had little tonic stimulating effect upon the heart, and not only failed to do good, but did positive harm, because it still caused tonic contraction of the small arteries and increased the work of the failing heart. Digitalis was of great use in failure of compensation from temporary causes. It generally did harm in the syphilitic, the arterio-sclerotic, and the aged cases.—The PRESIDENT alluded to the group of cases occurring in young athletes which depended on over-exertion. He agreed that the condition of the cardiac muscle was the most important guide in the use of digitalis.—Dr. CATTLE remarked on the clinical difficulty of deciding whether a heart was "fatty."

Mr. A. R. ANDERSON showed a man on whom he had successfully operated nine months previously for Actinomycosis originating in the Vermiform Appendix and honeycombing the whole thickness of the greater portion of the anterior abdominal wall.

Dr. C. BELL TAYLOR showed: (1) a case of Double Iridectomy from one blow without injury to the vision; (2) Cataract in a patient aged seventy years dispersed by Electricity; and (3) Cyclitis followed by Atrophy of both Globes, with Secondary Cataract and Synechiæ, in which good vision had been restored by operation.

MANCHESTER MEDICAL SOCIETY.

Exhibition of Specimens and Skiagrams.—Subphrenic Abscess.—Detection of Sugar in the Urine.

A MEETING of this society was held on March 3rd, Dr. GRAHAM STEELL, President, being in the chair.

Dr. MORITZ showed the Larynx and Trachea and related the further history of a patient whom he had shown to that society in March, 1895.[1] The patient was then suffering from an agglutination of the vocal cords the consequence of syphilis, and had been tracheotomised. Inter-laryngeal operations proved only of temporary benefit, and the patient refused to undergo any further operative interference. In October, 1895, she again began to suffer from urgent dyspnœa, which was found to be due to stenosis of the trachea. This was gradually and efficiently dilated by means of Schroetter's catheters introduced through the tracheal opening. The patient did not show herself from April until September, 1896, when she again became dyspnœic. But now Schroetter's catheters of even a larger size (No. 4 or 5) could be passed without meeting with any apparent obstruction and gave no relief. It was therefore concluded that there was another stricture lower down. The patient died in October, 1896, from suffocation. She was seen shortly before her death, and though the inspirations were accompanied by some stridor the dyspnœa was most expiratory, and at each expiration a peculiar click-like sound, as that of the closing of a valve, was heard. At the post-mortem examination the larynx was found entirely occluded by cicatricial tissue down to the lower edge of the cricoid cartilage. The mucous membrane of the trachea was free from cicatrices. The lumen of the trachea showed a slight constriction at its lower part, whilst above this there was a fusiform dilatation in which the rest of the trachea was involved. At the constricted part the tracheal cartilages were extensively softened, and to this condition the dyspnœa and click-like sound were due. There was, further, a stenosis of the right larger bronchus just before its bifurcation. The right lung was emphysematous and the left lung normal. Dr. Moritz also made some observations on the comparative facility of inspecting the trachea through a tracheotomy opening by means of aural or nasal specula (Zaufal's), with the head of the patient extended well backwards.

Dr. MCNAUGHT related a case of Subphrenic Abscess, probably due to rupture of the stomach and complicated by empyema, successfully treated by incision and drainage, and subsequent incision and resection of rib.

Mr. G. A. WRIGHT showed (with lantern slides) a collection of Skiagrams illustrating the Uses of the Process in General Surgery.

Dr. R. T. WILLIAMSON referred to the Difficulty of Detecting with certainty Small Quantities of Sugar in the Urine.

[1] THE LANCET, March 16th, 1895, p. 720.

Every test had some weak point, but by the following combination of tests a definite conclusion could be easily arrived at:—1. Apply Fehling's test. If no oxide of copper be reduced, or if there be a good reduction and other indications of diabetes be present, no further test is required. 2. In some cases other indications of diabetes are absent or the reduction of copper is slight. In such cases try the phenyl-hydrazin test—simplified method (test tube filled for half an inch with powdered sodium acetate, for half an inch with phenyl-hydrazin-hydrochlorate in powder, and the tube half filled with urine; keep boiling over a lamp for two minutes). A negative result shows that the substance reducing Fehling's solution is not sugar, and no further test is required. A positive result (deposit which under the microscope consists of yellow needle-shaped crystals in sheaves) indicates glucose; if scanty, possibly glycuronic acid. Lactose yields small yellow globules with very short spines. 3. Try the fermentation test (for twenty-four hours), using two tubes, one containing the suspected urine and the other normal urine for control (yeast = $\frac{1}{10}$ by volume). Excess of gas in the former tube indicates glucose. A negative result shows glucose to be absent or less than 0·1 per cent. 4. If the results be negative at the end of twenty-four hours, apply Fehling's test to the mixed urine and yeast. If Fehling's solution is no longer reduced, glucose which has been destroyed by the action of yeast is indicated. If Fehling's solution be still reduced, the reducing substance is not glucose.

LIVERPOOL MEDICAL INSTITUTION.

Exhibition of Specimens.—Smegma Bacillus.

A MEETING of the Pathological and Microscopical Section was held on March 4th, Mr. F. T. PAUL being in the chair.

The following specimens were exhibited:—

Mr. T. H. BICKERTON: Intra-ocular Tumours mounted in glycerine jelly.

Dr. BUCHANAN: Specimens and drawings of Tuberculous Tumour of the Iris removed by Mr. Bickerton. The patient, a negro, aged four years, in June, 1893, had a small speck in the iris, which increased rapidly, the eye being enucleated in October. Twelve months later symptoms of cerebral tuberculosis set in and the boy died. The sections exhibited bacilli, giant cells, and early tubercle in the iris and choroid.

Mr. G. NEWBOLT: (1) A Villous Tumour of the Bladder which had been passed by the patient; and (2) Vermiform Process removed from a femoral hernia in a woman on account of strangulation.

Dr. LESLIE ROBERTS: (1) Parasitic Flora of Skin, cultures and sections under the microscope; and (2) Psoriasis, Lichen Planus, and Morphœa.

Mr. THELWALL THOMAS: A Dissection of the Neck in a case where all the carotid arteries and jugular veins had been divided with many nerves in the left side of the neck in a man whose case was recorded in 1895.[1] He lived for only two years, and died from lung mischief on the right side. From the root of the neck to the base of the skull on the left side only one small part of the external carotid artery could be found giving off the lingual and superior thyroid arteries; the stumps of the common carotid and internal jugular veins were merged in a cicatricial mass, which also involved the cut sympathetic and pneumogastric nerves. The circle of Willis was normal, the only apparent attempt at collateral circulation being a large vertebral artery on the left side, the deep cervical artery being smaller than that on the right side.

Mr. F. C. LARKIN: (1) Acute Necrosis of the Os Calcis. (2) Appendix Cæci removed from a Strangulated Hernia in which the cæcum and appendix were found in a child; and (3) Hypertrophic Prostate.

Dr. A. W. CAMPBELL: (1) Tuberculous Growths in the White Matter of the Spinal Cord Posterior Columns; and (2) Tumour of the Posterior Nerve Root in the Sacral Region and Heterotopia Spinalis.

Dr. J. WIGLESWORTH: Cerebral Asymmetry.

Mr. PAUL, Mr LARKIN, Professor BOYCE, Dr. BUCHANAN, and Dr CAMPBELL joined in the discussions.

Dr GRUNBAUM read a note on the Smegma Bacillus, and mentioned that he had succeeded in growing the organism in milk.

Mr. PAUL, Professor BOYCE, and Dr. N. E. ROBERTS joined in the discussion.

[1] Brit. Med. Jour., Dec. 7th, 1895.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases, Specimen, and Photographs.—A Case of Tetanus.

A MEETING of this society was held on Feb. 25th, the President, Mr. RECKLESS, being in the chair.

The following cases, specimen, and photographs were exhibited:—

Mr. HARRY LOCKWOOD: A case of Myositis Ossificans (previously shown) to demonstrate the progress of the disease.

Mr. HARVEY: (1) An adult with Facial Hemiatrophy; and (2) a child with Marked Congenital Asymmetry of the Head and Limbs.

Mr. ARCHIBALD YOUNG: A case of Intra-thoracic Growth.

Dr. WEARNE CLARKE (Chesterfield): Photographs of a case of Raynaud's Disease. He related particulars and made general remarks.

Mr. DALE JAMES: A case of Raynaud's Disease.

Dr. RICHARDS (Chesterfield): An album with many striking photographs illustrating Varieties and Stages of the Small-pox Rash.

Dr. ARTHUR HALL: (1) A Brain with Multiple Hæmorrhages, the most conspicuous being a primary ventricular hæmorrhage; and (2) a case of Syphiloderma, which at one time looked so like Scrofuloderma as to be mistaken for it.

Dr. EASTES read notes of a case of Tetanus.—Dr. SORLEY, in discussing Dr. Eastes' paper, related the history of a case of tetanus recently treated at the Sheffield Union Infirmary. The points of interest in the case were the absence of any evidence of injury and the occurrence of a rigor which apparently marked the commencement of the symptoms. There was trismus and marked opisthotonos, but no clinic spasms, unless, perhaps, the occurrence of severe paroxysms of pain beginning in the epigastric region and passing round the body and shooting upwards along the spinal column. Nourishment of a fluid kind was freely taken, and the patient was conscious up to the end, which occurred suddenly in a paroxysm, the patient dying in a rigid attitude. The brain and spinal cord seemed healthy. The whole course of the disease lasted five days. No antitoxin was employed.—Mr. RICHARD FAVELL, Mr. SNELL, and Dr. SINCLAIR WHITE joined in the discussion.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

The Typhoid Bacillus.

A MEETING of this Section was held on Feb. 19th, Dr. J. M. REDMOND, President, being in the chair.

Dr. MCWEENEY gave an account of some of the most recent researches into the Distribution and Identification of the Typhoid Bacillus. He dealt in the first instance with the results obtained by Dr. Cartwright Wood in his recent experimental investigation of the relation between oysters and the typhoid bacillus. The matter might be summed up as follows. The specific bacilli can remain alive for lengthened periods in sea water, though without multiplying. They can remain alive for lengthened periods in the oyster-fluid, though not in the interior of the oyster itself. At somewhat warm temperatures they can multiply in the fluid of the oyster, and this may happen after removal of the mollusc from the sea during the storage period that precedes consumption. All oysters from beds subject to recent contamination should be condemned. The other research which he discussed was more recent still, having been published in the current number of the *Annales de l'Institut Pasteur* by Dr. Remlinger and Dr. Schneider, of the French Army Medical Department. Their object was to ascertain whether the typhoid bacillus occurred in nature apart from cases of the disease. They employed Elsner's method for the raw material—soil, water, and fæces of non-typhoid patients—and, in addition to the eleven characters relied upon by Lösener, they applied the serum test by bringing serum from a horse immunised against Eberth's organism in contact with the organism under examination. With the same object they used the serum of typhoid fever patients. Finally, they inoculated suspected cultures into guinea-pigs with and without protective serum injections. Only when the suspected organism

re-acted precisely in the same way as typical typhoid bacilli under the same circumstances did they consider the identification complete. Bacilli answering all the above tests were isolated from various samples of drinking water, soil, and fæces of patients who had never had typhoid fever. The observers were obliged to conclude that the typhoid bacillus is extremely diffused and that it only needs favourable circumstances, such as temporary individual vulnerability, in order to effect a lodgement in the human system. Attacks and epidemics may therefore originate, so to speak, *de novo*—that is, without connexion with any previous case of the disease, which amounted to a re-instatement of Murchison's views. In conclusion Dr. McWeeney demonstrated naked-eye reactions of typhoid serum on the specific bacilli. Tubes prepared by Wright's method were handed round, showing the precipitation of the bacilli by serum from a typhoid fever patient, whilst a central tube treated with a similar amount of non-typhoid serum was turbid owing to the diffusion of the mobile organisms.

Dr. J. W. MOORE believed that all physicians admitted that the eating of oysters might be followed by illnesses that were often accompanied by diarrhœa, high temperature, &c., but were certainly not typical cases of typhoid fever. He had seen two cases of what he called "oyster fever": one was that of a physician who had eaten oysters and in two or three days had symptoms resulting in a fever which certainly was not typhoid fever. The patient recovered in about a fortnight, having had some slight rise of temperature, &c. He believed that oysters were capable of conveying many diseases.

Dr. PARSONS thought the fact stated by Dr. McWeeney with regard to the extreme prevalence of the typhoid bacillus, that in seven out of ten samples of soil typhoid bacilli should have been isolated by the two French experimentalists, was a very astounding one.

Dr. MCWEENEY, in reply, said that he did not question the results of the French experimentalists, because they had worked very diligently and with very great detail, and he thought that their results had been honestly arrived at. It was well known that the tetanus bacillus was very widely distributed. He believed that bacilli bearing a very close resemblance to typhoid bacilli were everywhere around us.

Reviews and Notices of Books.

A Collection of the Published Writings of William Withey Gull, Bart., M.D., F.R.S., Physician to Guy's Hospital. Edited by THEODORE DYKE ACLAND, M.D. Oxon., Physician to St. Thomas's Hospital. London: The New Sydenham Society. 1896.

THE first volume of these collected writings was published in 1894 under the same editorship, and contained the late Sir William Gull's more purely medical works. The present volume contains a memoir commenced by Sir Henry Acland, and finished by the editor with the assistance of Dr. Pye-Smith and others, some fragments, notes and aphorisms, and sundry addresses. The memoir is a well-written and very interesting account of a very remarkable man, for Gull, though modern as far as his science went, was of a cast of mind akin to those seventeenth century thinkers whom he loved so well, Sir Thomas Browne and George Herbert. He was truly a spiritual philosopher, and had the same intense love of nature that characterised Henry Vaughan, also a medical man, the Welsh poet and mystic. Dr. Acland quotes the well-known passage from the "Religio Medici," as a favourite one with Gull and as according well with his feelings, which commences: "At the sight of a crucifix I can dispense with my hat, but scarce with the thought or memory of my Saviour." Two addresses are given upon the Study of Medicine, both delivered at Guy's Hospital—the one in 1855, the other in 1874—and in both the chief canon laid down is that the study of medicine is the study of nature. He rightly lays down a very high ideal as the thing to be aimed at, so high that many of his hearers must have despaired of ever attaining it; but the consciousness of never doing so well as he would wish to do has been the making of many a successful man.

Perhaps the most useful of the addresses to the busy practitioner will be those upon the Collective Investigation of Disease, for the others in the collection, though scholarly, philosophical, and learned, demand more mental application for their comprehension than most men have the leisure or training to provide. The collective investigation of disease was a subject which Gull had deeply at heart and furthered by every means in his power, and though, perhaps, less advance has been made in the thirteen years or so which have elapsed since the addresses were written than he hoped would be the case, still it must be remembered that good and lasting work is invariably slow and that hasty deductions are worse than useless. In the first of these addresses occurs the following passage, which we quote as being eminently characteristic of Gull's way of reconciling apparently contradictory propositions. He is speaking of the help which the general practitioner should give in collective investigation. "It will perhaps be objected, and naturally, that it is almost impossible to organise for any useful purpose the labours of men already overburdened by the cares and fatigue of practice, and that there is neither time nor fitness for delicate inquiries on their part ..... that, further, it cannot be denied that when we see the meaning of the apparent trifles which in practice would otherwise oppress and worry us our burden is thereby much lightened, and that nothing could encourage us more than to feel that even one daily observation recorded was adding to our general store of knowledge and making the path of practice more easy. ..... We, indeed, owe it to those members of our profession who are admittedly overwhelmed by the apparently senseless details of their work to promote a movement like this, the object of which is to bring order into their chaos and to help them to stamp a scientific value upon facts hitherto only burdensome. If we compare the unflagging interest of any pursuit where the aim is high and clear with the tediousness and wearisomeness felt when working in the dark we shall readily admit that we are actually lightening the burdens of practice by thus adding to them, and by giving some portion of them a sense and meaning." This is a passage eminently true, if perhaps somewhat a counsel of perfection, and reminds us of the old statical paradox of preventing a body falling by adding a weight to that side to which it tends to fall, but in both cases the thing is a possibility. Thinkers of every class owe a debt of gratitude to Dr. Acland for the issue of these thoughts of a noble mind.

A Manual of Practical Anatomy. By D. J. CUNNINGHAM, M.D. Edin., F.R.S., Professor of Anatomy and Chirurgery, University of Dublin. Vol. I. Second Edition. Illustrated with Engravings. Edinburgh and London: Young J. Pentland. 1896. Price 12*s.* 6*d.*

AMONG the many excellent manuals of dissections which exist we know of none of which we can speak more highly than of the work before us, and therefore we welcome the appearance of the second edition of the first volume. There are two dangers which have to be avoided by the writer of a manual of practical anatomy. On the one hand, he must refrain from describing so fully the structures exposed that the student is wearied by the description; and on the other, the work must be a great deal more than a mere catalogue of the objects to be seen. There is a far greater tendency to err on the side of excess than in the opposite direction, and the rule should be to describe only so much as can be observed by a student of ordinary intelligence, while the less obvious facts and the more detailed statements find their appropriate place in a work on

systematic anatomy. This rule has been observed by Professor Cunningham. The descriptions are careful, and though by no means brief they contain but very little that could be omitted without impairing their completeness. The book represents what may be called the Edinburgh School of Anatomy, though the differences at the present day between the methods of dissection at different medical schools are only slight.

This volume deals with the upper and lower limbs and the abdomen, the description of the thorax and the head and neck being contained in the second volume.

The nomenclature employed is, on the whole, that which is in common use in this country, and the terminology recommended by the committee of the Anatomical Society of Germany in its recently published report has, when different, been added; but there is discernible a slight tendency to the over-use of terms in the Latin form—for instance, the triangle of Petit appears only as the "trigonum Petiti," while the triangle of Hesselbach retains the English form; but, on the other hand, the trigone of the bladder is never called "trigonum vesicæ." Some of the terms recommended by the German Anatomical Committee are decidedly cumbrous, and we can only hope that they will never displace their more common equivalents; thus, "Canalis adductorius Hunteri" is a poor substitute for "Hunter's canal." Also, it is by no means an advance in nomenclature to call both the glenoid and cotyloid ligaments "labrum glenoidale." Professor Cunningham himself seems in doubt as to the value of these additions, as they are not given in the index.

Numerous figures illustrate the text, and we are glad to see that they are diagrammatic; in many recent text-books attempts have been made to represent exactly the appearances to be met with in a dissection. These attempts to be artistic are useless, for a diagram to be of any real value must be diagrammatic, and may on occasion *accentuate* features of importance. Figs. 9, 10, 56, and 88 are good examples of this. A figure which merely represents accurately what can be seen in the dissection is out of place in a work on practical anatomy, for the student should see it in the part dissected and not in the book.

The surgical anatomy is very satisfactory. Especially can we speak with favour of the surgical anatomy of hernia. A very full index concludes the volume.

Microscopic Researches on the Formative Property of Glycogen. Part I. — Physiological. By CHARLES CREIGHTON, M.D. Aberd. London: Adam and Charles Black. 1896. Price 7*s.* 6*d.*

IN this monograph Dr. Creighton describes his microscopic studies in a domain where some of his earlier work was done. The object of his researches is one of some interest; it is to determine to what extent glycogen plays a part in the building up of the animal tissues. The presence of this substance in fœtal and placental structures was known to Claude Bernard, and references to its distribution and possible function as a primordial element have found their way into the writings of physiologists since his day. But we believe that these studies of Dr. Creighton form the most complete and most systematic attempt to interpret the true significance of animal starch. The procedure for its detection in tissues is of the simplest; it consists in the obtaining of the well-known re-action of iodine upon glycogen (the wine red re-action) to be obtained on microscopic sections of organs and tissues. The general conclusion to which Dr. Creighton has been led by his investigations may best be given in his own words. He says: "Briefly expressed, the formative property of glycogen is analogous to, or parallel with, that of hæmoglobin. Whether animal starch is a derivative of hæmoglobin in the sense in which vegetable starch is a derivative of chlorophyll is a question of chemical origins upon which I do not profess to throw light. But from evidence proceeding upon altogether different lines I have been led to the conclusion that glycogen plays the part of a carrier to the tissues, that it contributes somewhat to the building up without losing its own molecular identity, that it is present at the formation of tissues and employed therein without becoming part of them, and that it acts thus in some cases as the precursor or deputy of hæmoglobin, and until such time as the vascularity of the part is sufficiently advanced, in other cases as the substitute of hæmoglobin from first to last in those tissues which are built up in whole or in part without direct access of blood."

The evidence upon which such conclusions are based has been derived from histological studies of the growth of the bronchial tree, of the kidney, of the choroid, of the intestinal mucosa and of muscle, skeletal and cardiac, among vascular structures; whilst for non-vascular structures the tissues examined comprise the enamel and dentine of teeth, hoof, nail, and hair, and hyaline cartilage. In these latter sites it would distinctly appear that the glycogen plays the part of blood, and it is interesting to observe that in ossifying cartilage the glycogen first appears in spots, which subsequently become centres of ossification. Observations were also made upon glycogen in the placenta and developing mammary gland and also in the fat cells of hibernating animals, this latter forming a new contribution to the physiology of hybernation. The appearances described are well illustrated in the plates that are appended to the text. A second part of the monograph will deal with the pathological side of the question.

LIBRARY TABLE.

Herbal Simples Approved for Modern Uses of Cure. By W. T. FERNIE, M.D. Durh. Bristol: J. Wright and Co. Second Edition. 1897. Price 6*s.*—This enlarged edition of a work we reviewed in our issue of Sept. 21st, 1895, contains a quantity of old-world lore about herbs and plants which is exceedingly interesting. The modern cook knows but little of the many charming dishes of vegetables which our ancestors ate, and the modern housewife nothing. Instead, too, of the cordials and essences which were the delight of our great-grandmothers, people now dose themselves with "Specific No. 1," or "Mother Bunch's Tea," or "Dr. Dee's Boluses for Burdened Believers," or one of the many "amides" or "phenazones" manufactured from coal tar. At one time the "green end of a goose-dropping" was considered a sovereign remedy for fits, and, though scarcely a herbal simple, was preferable to nastinesses sold in bottles with a Government stamp. We are glad to see that Dr. Fernie lauds garlic in cookery, for this excellent bulb is far too little used in our country.

Medicine in Shakespeare. By JOHN MOYES, M.D. Glasg. Glasgow: James Maclehose and Sons. 1896.—This little book is an expansion of a thesis for the Doctorate of Medicine presented to Glasgow University in 1886. The writer died in 1894, and these labours of his appear under the editorship of Dr. James Finlayson. Shakespeare was a genius so many-sided that it is not surprising to find that all his delineations of disease could scarcely be improved upon by a modern physician. The subject of insanity, a disease which the poet pictured with no less vividness than other disorders, Dr. Moyes has left untouched, but he refers to Dr. Bucknill's "Psychology of Shakespeare," published in 1859, and reviewed in our issue of Oct. 15th of that year. Dr. Moyes, however, deals very fully with the other diseases incident to humanity, and has produced a very readable little book.

Our Secret Friends and Foes. (Romance of Science Series, Society for Promoting Christian Knowledge.) By P. F. FRANKLAND, F.R.S. Third Edition. Price 3s.—Dr. Percy Frankland has here given us an enlarged and revised edition of his book about bacteria written in popular language. In addition to the part played by micro-organisms in the production of diseases, an account is given of their agency in various commercial phases, such as butter-making, brewing, cheese-making, and nitrification. The book can be cordially recommended to anyone desirous of getting a clear idea of the importance of these organisms and of the strides recently made towards a better understanding of their mode of action.

The Management of Infancy. By ANDREW COMBE, M.D. Edited by Sir ARTHUR MITCHELL, K.C.B., M.D. Aberd. Edinburgh and London: Oliphant, Anderson, and Ferrier.—This is an abridgement of the tenth edition of the late Dr. Combe's book, and is published by desire of the Combe trustees, "so as to bring the work easily into the hands of working people." There is no doubt that the matter of the book is admirable, nor is there any doubt that a knowledge of how to manage an infant is sadly to seek among the middle and lower classes; but we rather fancy that the style of this work puts it above the heads of most of those for whom the present edition is intended. Still, the publication of it is an experiment well worth trying.

Musa Medica: A Sheaf of Song and Verse. By J. JOHNSTON, M.D. Edin. London: The Savoy Press. 1897. Price 2s 6d.—Dr. Johnston has here published a collection of songs and verses. The former mostly deal with medical subjects, and are well suited for a medical smoking concert — notably, The General Practitioner and John Bolton, C.P. The other verses are concerned with rural sights and sounds.

Everybody's English Song-book, with Melodies. By BASSO. London: Saxon and Co.—A collection of well known songs, some good and some the reverse, being what Thackeray called "simple appeals to the affections" of the T. H. Bayly school. However, there are one or two gems, such as Waller's "It is not that I love you less," and Ford's "Since first I saw your face."

A Young Congo Missionary. By WILLIAM BROCK. London: H. R Allenson. Price 1s. 6d.—The missionary was Sidney Roberts Webb, M D. He served the office of house surgeon to the Mildmay Mission Hospital for a year, and then proceeded to the Congo under the auspices of the Baptist Missionary Society, where he worked for five years; and, eventually being attacked with black water fever, died and was buried at sea on the way home The book is a simply told record of a very earnest, self-denying life.

JOURNALS AND REVIEWS.

Archives de Physiologie. Fondées par M. BROWN-SÉQUARD. Publiées par MM. BOUCHARD, CHAUVEAU, et MAREY. Cinquième Série, Tome IX, No. 1, Janvier, 1897. Paris: Masson et Cie., Éditeurs.—The following articles are contained in this part. 1. M. J. E Abelous: Estimation of Reducing Extractives in Organs. 2. M. J. Lefèvre: Variations in the Refrigerant Power of Water in Respect to Temperature and Season: (*a*) On Man. 3 M. N. Paulesco: The Coagulability of Hepatic Blood. The author finds that in fasting dogs there is no difference in point of time of coagulation between the blood of the portal vein, that of the general venous circulation, and that of the hepatic vein, whilst in dogs in full digestion the blood of the hepatic vein coagulates more slowly than that of the vena portæ, and this coagulates more slowly than that of the venous system generally. The quantity of fibrinogen, or, speaking generally, of the globulins, varies but little in these three kinds of blood. 4. M. Alexandre N. Vitzou of Bucharest: New Formation of Nerve Cells in the Monkey's Brain after Complete Ablation of the Occipital Lobes. The conclusions at which the author arrives are that the brain of the young monkey possesses the power of repairing loss of substance and of recovering in part the loss of its anatomical and physiological properties. Thus the recovery of the visual sense lost by ablation of the occipital lobes is due to regeneration of nerve tissue and re-establishment of function. Drawings are given of the appearances seen. 5. M. Bosc and V. Vedel on Free Intravenous Injection of Normal Saline Solution (7 per 1000) in the Treatment of experimentally produced Colibacillary Infection, which they find serviceable, but requiring precaution and care. 6. MM. Piéri et Portier on the Presence of an Oxydase in Certain Tissues of Acephalous Mollusks. 7. Denis Courtade: Contribution to the Rhythmic Function of the Heart. 8 and 9. M. J. Tissot on the Laws of Energetic Movements in Muscles contracting Voluntarily (static contraction) established after the study of respiratory changes, and on the Creation of Elasticity and the Energy which it has Generated in Voluntarily Contracted Muscles. 10. MM. L. Hallion and Ch. Comte on the Form of the "Total Pulse," as indicated by the authors' plethysmograph. 11. M. A. M. Bloch: The Pneumoscope. 12 Dr. W. H. Thompson of Belfast: The Action of Peptone on the Vaso-motor System. He finds that the peptone of De Witte in doses of ten milligrammes per kilogramme of the body weight of the animal lowers the arterial pressure due to peripheral vascular action. It also has an action in the dog on the coagulation of the blood, varying with the quantity administered. 13. M. M. Lambert: The Influence of Cold on the Urinary Secretion. 14 Dr. Alex. Rouxeau: An Account of 103 Operations of Thyroidectomy in the Rabbit, in the course of which he demonstrates that four-fifths of the animals operated on present formidable nervous symptoms indicative of some lesion of the nervous system. 15. M. P. Langlois on Functional Alteration of the Adrenals. 16 MM. E. Wertheimer and L. Lepage on the Movements of the Limbs produced by Stimulation of the corresponding Cerebral Hemisphere. 17. M. A. Charrin: Experimental Epilepsy. 18. Henri Lamy: Medullary Lesions produced Experimentally by Aseptic Embolisms; an important article illustrated by many woodcuts. 19. J. Laudenbach of Kiew: Experiments on the Hæmopoietic Function of the Spleen. 20. MM. S. Dastre and N. Floresco on Fibrin Ferment. 21. M. A. Chauveau: A Criticism on Hirn's Experiments on Thermodynamics and Work.

The *Cornhill Magazine* for March continues its series of Famous Trials, the one for the current number being that of Dr. Pritchard. In most of the famous trials for murder by poison the defendants have been medical men, probably owing to the fact that they have a facility for obtaining poisons which is denied to the ordinary layman, that is to say, as regards the rarer poisons—witness the case of Dr. Lamson. Pritchard, however, used the easily detected poison antimony, as did his fellow criminal Dr. Smethurst—if, indeed, the latter did attempt the crime for which he was tried. Pritchard was perhaps as cold-blooded a scoundrel as ever existed, and in addition to two murders was probably guilty of arson under most aggravated circumstances. For this, however, he was never brought to trial.

In the *Westminster Review* for March Dr. Prosser James has a note upon the Hamilton Association for Providing Trained Male Nurses, an association which provides for a much felt want.

Knowledge.—The contribution to the series of articles on

the Science of the Queen's Reign this month is by Hugh Robert Mill, D.Sc., F.R.S. Edin., and deals with the progress of geography during the past sixty years. Dr. Nansen's achievements are noticed in a separate article.

New Inventions.

A NEW COMBINATION SPECULUM.

THE difficulty of keeping the anterior wall of the vagina from obstructing the line of vision while using duck-bill specula must be my excuse for publishing the modification (or rather combination instrument) represented in the illustrations. In nulliparæ it is sometimes no easy matter, even with the patient in the Sims' position, to

FIG. 1.

Speculum with rings lying flat for introduction.

obtain a clear view of the cervix uteri, the anterior vaginal wall frequently obstructing the view. The illustrations represent the union of my "ring speculum" and Sims' duck bill in one instrument, which can be easily introduced while the rings lie flat; and on turning the screw at the base the rings open at right angles to the duck bill

FIG. 2.

The same with rings upright so as to stretch the vaginal wall.

and force the anterior vaginal wall forward and render the instrument self-retaining. This speculum will be found easier to introduce than the cylindrical speculum of the same size, as all expansion takes place after introduction. The makers are Messrs. Arnold and Sons of Smithfield, London.

Cheltenham. ALEXANDER DUKE, F.R.C.P. Irel.

THE BATTLE OF THE CLUBS.

THE BRADFORD AND DISTRICT MEDICO-ETHICAL SOCIETY.

WE have received a copy of the rules and by-laws of the Bradford and District Medico-Ethical Society. This society has completed twenty-five years of existence, and last year fought and conquered the Bradford School Board over the question of medical certificates. This matter was fully reported in THE LANCET of July 25th and Aug. 2nd, 1896. The action of the society has also brought about that the minimum fee for a club patient shall be 4*s.* per annum. There is nothing very remarkable about the rules, which lay down a standard of conduct such as would be generally approved by the members of an honourable and learned profession, but the suggestions for a scale of fees are, we think, worthy of notice. The principle laid down is the following:—

> The general standard is ruled by the average fees charged by the leaders of the profession in any locality. Where the senior practitioners of repute are satisfied with low fees the junior and less known ones are necessarily condemned to accept inadequate remuneration. It is right and expedient that, as is the rule in almost every other profession, increased experience and reputation should bring to the medical practitioner also an increased standard of fees, and not merely a larger number of the small fees with which young and unknown men must be content.

This seems to us to be a very sensible way of looking at things. Those who, like Albert Smith's Mr. Koops, undersell their brethren cannot set a very high value either on their services or the calling they pursue. The following is a portion of the scale of fees decided upon:—

Class.	House rental.			Fee for visit or consultation, to include medicine.		
	£		£	£ *s.* *d.*		£ *s.* *d.*
I.	Up	to	25	0 2 6	to	0 3 6
II.	25	to	50	0 3 6	to	0 5 0
III.	50	to	75	0 5 0	to	0 7 6
IV.	75 and upwards, the minimum fee to be 7*s.* 6*d.*					

In exceptional cases the charges for attendance to be at the discretion of the medical attendant.

For each additional patient seen in a house a fee to be charged.

SPECIAL SERVICES.

Such as a first visit or special second visit to be a fee and a half. Night visits—that is, from 10 P.M. to 8 A.M.—a double fee; mileage, beginning two miles from the medical man's house, to be for Class I., 1*s.*; Class II., 2*s.*; Class III., 3*s.*; Class IV., 4*s.* per mile, in addition to the ordinary fee. Sunday visits and consultations to be a fee and a half.

MIDWIFERY FEES.

Class.	£		£	£ *s.* *d.*		£ *s.* *d.*
I.	Up	to	25	1 1 0	to	1 11 6
II.	25	to	50	1 11 6	to	2 2 0
III.	50	to	75	2 2 0	to	4 4 0
IV.	75	to	100	4 4 0	to	5 5 0

In cases of very poor people with house rents less than 4*s.* 6*d.* a week the midwifery fee to be 15*s.*, if paid at the time (except in first cases); if not, to be 21*s.* Extra midwifery services, such as turning, forceps, craniotomy, removing retained placenta, &c., to be a fee and a half. Visits to midwifery cases not completed in twenty-four hours from the first visit to be charged for as ordinary visits.

DOCKYARD MEDICAL CLUB, PORTSMOUTH.

At the annual general meeting of the Portsmouth Dockyard Medical Benefit Society, held recently in St. Faith's Mission Hall, Landport, one of the speakers was so kind as to confirm our statements that lay managers of these clubs do not behave fairly or politely to their medical officers. In moving the adoption of the report this person said that the society ought to have the whip hand of the medical officers and let them see that they were the servants of the society. One of the medical gentlemen had taken exception to certain members being allowed to belong to the society, expressing the opinion "that it was not right for many of the members who were possibly better off financially than himself to be allowed to remain in the society, and he thought some scheme could be arranged to exclude this class of members." This, said the speaker, was dictating as to who should and who should not belong to the society.

THE LANCET.

LONDON: SATURDAY, MARCH 13, 1897.

DR. CULLINGWORTH did not err in the choice of a subject for his opening address as President of the Obstetrical Society. There is no greater joy to medical men than for one of their number to point out *desiderata* in therapeutics and the means of their accomplishment. And there is no one department of practice in regard to which such service is more acceptable than the obstetric department. The profession has pretty well agreed that puerperal fever can generally be prevented, and every contribution made on good grounds and in good judgment towards this end by a teacher or a practitioner of medicine is to be received with thankfulness.

Dr. CULLINGWORTH illustrates his subject somewhat differently from those who have in various ways taught us the same lesson. Like Sir JOHN WILLIAMS, Dr. BOXALL, and Dr. GODSON, he founds his argument on the experience of the lying-in hospitals, the existence of which was seriously threatened as being hopeless foci of puerperal fever, but which by dint of diligent and thorough use of antiseptics—notably of the perchloride of mercury—have been practically cleared of this pest. He then goes on to compare with this state of things the continued, almost the increasing, prevalence of puerperal fever in private practice. He selected for illustration certain districts of the country where the facts have been specially made out or where the undue prevalence of puerperal fever strikes the student of such questions. There is one significant point to be noted in this and in other discourses of the kind—the admission that in respect of deaths from what are called the accidents of childbirth as distinguished from deaths from puerperal fever (that is, from hæmorrhage, eclampsia, puerperal mania, embolism, &c.) there is a diminution in both London and the provinces, especially in London. This is a most satisfactory revelation, and shows that in respect of obstetric education and art there is a decided advance of late years. But the fact only makes it the more remarkable that there should not be a corresponding improvement in the mortality from puerperal fever. The difference, or what we may call the inconsistency, is so curious that we are almost led to suspect that there must be fallacy in the figures or in the way of using them. It is scarcely credible that new generations of medical students are being so trained as to be more skilful in dealing with the accidents of childbirth and less so in the use of a douche and other comparatively simple precautions that are to avert "death and all the sad variety of pain" covered by the expression "puerperal fever." This aspect of the case requires a little more attention than it has received. Whatever may be the explanation of this inconsistency, let us look at the statements of Dr. CULLINGWORTH. He deals impartially with all classes affected by his statistics—whether midwives or medical men, and whether residing in the provinces or in the metropolis, in the East-end or in Hampstead. We give him credit for the simple desire to get at facts and to carry the improvement of midwifery and the fame of medicine to their highest points. He sets forth the districts in which puerperal fever or mortality from it is highest. Unfortunately he does not always deal with the same sort of statistics in comparing different parts. Thus, in regard to provincial districts he deals chiefly with mortality from puerperal fever, while in respect of London he supplies and reasons from the mere notifications of the disease. True, he says that the conclusions would come out much the same, but there is a great difference between notifying a case of puerperal fever and a death from puerperal fever. What is puerperal fever? Is any pyrexia in the puerperal period to be dignified with this epithet? Clearly there is much ground for vagueness and unreliableness in the mere notification of cases. One man, not necessarily with more candour than another, but with less decision and less power of definition, may notify a passing pyrexia as puerperal fever which another would regard as one of the many febriculæ to which the lying-in woman is exposed on the slightest provocation. The statistics concerning London are based on the *notifications* of puerperal fever kindly supplied to Dr. CULLINGWORTH by Mr. SHIRLEY MURPHY, medical officer of health of the Administrative County of London. They bring out the fact that puerperal fever is noticeably prevalent in some of the better parts of London. Thus Hampstead, with its comfortable villa population and the Heath in proximity, heads the list. Islington is not much better, and its best and least populated part has most cases. On the other hand, this is a very densely populated parish and has more excuse than Hampstead for such cases. But why should its best parts have more cases? Here we may suppose that a report of *deaths* would be corrective of a report of mere notifications. "For its size," Mr. HARRIS, the medical officer of health, in his report for 1895, says, "the parish is remarkably healthy." He reports twelve deaths from puerperal fever in 1895, or 1·21 per 1000 births; the mean rate for England and Wales is 2·0 per 1000 births. No doubt, according to present and most wholesome doctrine, 1·21 per 1000 is 1·21 per 1000 too many; but it is a very different thing from 3 per 1000, the notification number as given by Dr. CULLINGWORTH. But it is in the provinces that the mortality returns are most serious, especially in some parts of Wales and in Lancashire. In the Pontypridd district it is 4·1 per 1000. In the Merthyr Tydvil district it is 4·7 per 1000. In the Bridgend district it is 4·5 per 1000. In the Haydock district of Lancashire the mortality is excessive. In all these districts the majority of cases are attended by midwives, mostly untrained and grossly ignorant. In Haydock the medical officer of health, Dr. HAYWARD, avers that scarcely one-fifth are attended by medical men, and, it must be added, the districts are insanitary.

To bring all such facts into the light of the clearest criticism is the plainest duty of medical teachers and medical journalists, and the paper on which we have commented should receive the anxious attention of every practitioner.

We cannot help suspecting that there are some fallacies in the presentation of this subject. It is inconceivable that private practitioners should be less careful of antiseptic precautions than they were ten or twenty years ago. The contrary is notorious. Yet this is the assumption required by the prevalent doctrine of obstetric teachers. But of one thing we are certain—namely, that the practitioners of the country will consent to no permanent superiority in the results of lying-in hospital practice as compared with their own.

AT the present time, when we read of the action of certain European Powers in respect to cargoes of cotton from plague-invaded ports, it may not be out of place to inquire briefly upon what evidence this fear of the importation of plague through the agency of such articles as cotton or wool is based. It is an easy matter to assume that when an infectious disease is prevalent within any given district there may be fear of such disease being conveyed through the agency of merchandise from the invaded centre; but when we ask upon what evidence this fear is based we are not so easily supplied with an answer which is proof against destructive criticism. We read in the text-books of plague having been conveyed from one place to another through the agency of bales of cotton or wool, but the evidence which is given as supporting this statement is as a rule somewhat scanty. Indeed, it seems that when some of these questions are approached in a spirit of unbiased inquiry there is but little evidence tending to support the text-book statements. For instance, among European nations the French are not behindhand in their dread of the importation of infection through the agency of certain merchandise from infected Indian ports, but it does not seem that the French in taking up this attitude, are mindful of a certain Report which was made to the French Government in 1846 by a Special Commission appointed by the French Academy of Medicine upon this very subject, and which Report was brought before the Lord President of the Privy Council by Sir JOHN SIMON in 1875.

In bringing forward the evidence adduced in this Report Sir JOHN SIMON pointed out that Western Europe had not suffered from plague for more than 150 years, and that up till quite recently the disease had been frequent in the Levant, from which plague-invaded district wool had in all times been exported without apparently any case of plague having been caused thereby. Allegations, dating from 150 to 200 years back, that merchandise from plague-infected districts had carried infection are not, Sir JOHN SIMON observes, such as can be accepted in the present day (1875) without much careful scientific sifting; and against the probability of these statements having any basis in fact there is not only the negative evidence just referred to, but also the delivery of the Commission of 1846. The delivery was as follows: "Rien ne prouve que les marchandises puissent transporter la peste hors des foyers épidémiques"; and the arguments upon which this conclusion was based were there: "En 1835 la peste épidémique sévissait à Alexandrie sur les employés de tout grade habitant dans les magasins du gouvernement Egyptien. Cependant une très grande quantité de balles de coton journellement manièes par les hommes de peine furent expédiées de janvier à juin, c'est-à-dire pendant toute la durée de l'épidémie, dans tous les grands ports de l'Europe sans qu'il en résultât aucun accident de peste. Il en fut porté en 1835: en Angleterre, 31,709 balles; à Marseille, 33,812; à Livourne, 424; en Hollande, 150; à Trieste, 32,263; dans divers ports, 32. Ces balles de coton, nous le répétons, ne donnèrent la peste à personne, quoique aucune précaution n'eût été prise pour les désinfecter. Soumises à la presse, en dehors du navire, elles étaient ensuite entassées dans un espace aussi étroit que possible; les écoutilles étaient fermées, et on expédiait ainsi le navire. Sur 16 navires anglais chargés de coton qui quittèrent Alexandrie du commencement du janvier à la fin de juin, 8 eurent la peste à bord, et cependant le coton chargé sur ces navires ne fut pas plus dangereux que celui des navires non infectés. Nous terminerons, messieurs, ce que nous avions à dire sur la transmissibilité de la peste par les marchandises, en arrêtant votre attention sur un fait d'une grande portée, et qui est positivement et officiellement reconnu. Depuis 1720, aucun des portefaix employés dans le lazaret de Marseille au déchargement et au maniement des marchandises n'a contracté la peste." Sir JOHN SIMON thus concluded his report: "Under these circumstances I evidently have no facts which would justify me in stating it to be necessary for the public safety that wool or other merchandise from Eastern places infected with plague should be excluded from this country."

We are far from asserting that it is impossible for plague when its virus is in a certain phase of activity to be conveyed through the agency of cotton or wool, but in endeavouring to arrive at any conclusion on this question the very important negative evidence furnished above should receive its due share of consideration; and it is to be regretted that articles on plague in the text-books are, for the most part, silent as to the conclusions of the French Commission, although at least sufficient prominence is given to "reports" in the other direction. If action were taken upon the statements contained in some of the text-books, it is conceivable that under certain circumstances much misery might be produced in some of the manufacturing districts of England, loss and misery which would be, perhaps, hardly justified upon the evidence obtainable upon this point.

THE important question as to the share taken in the spread of diphtheria by the aggregation of children in the public elementary schools is one upon which a marked difference of opinion exists between the medical officers of the Administrative County of London and of the London School Board respectively. Upon the general thesis as to the liability of this, as of other infectious diseases, to be disseminated by this means there is no room for disagreement, the proposition is self-evident. The persistence of diphtheria in the metropolis, its steady yearly increase, and its fateful roll of child mortality does, however, most urgently demand the determination of the extent to which school influence operates. Mr. SHIRLEY MURPHY'S careful and impartial studies of this subject have led him to the very definite conclusion that the school factor is one of the chief agencies to be considered in the search for

a rational explanation of the extension of this disease. He has shown how the tendency of diphtheria to attack in undue proportion children of "school age" has increased *pari passu* with the increase of elementary schools, and, further, that during the period when schools are closed for the holidays there is so marked a decline in the incidence and mortality from the disease as to compel the conclusion that school attendance has much to do with its spread. It is needless to dwell upon the gravity of such a conclusion, which cannot be dismissed without a thorough investigation, one too that places a heavy responsibility on those directing such schools in respect to the provisions they make for preventing the spread of infection. The special report made by Dr. W. R. SMITH at the request of the School Board in April, 1896, was an attempt to show that the spread of diphtheria in London could not be explained on the ground of the increasing liabilities to infection at s hools, the multiplication of which, on the first hypothesis, would mean the multiplication of foci of infection. He did not limit himself to London, but supported his argument by an appeal to the variable distribution of diphtheria in all parts of the country and at different periods of years, contrasting this with similar changes in the geographical distribution of other specific infectious diseases. Dr. SMITH holds that age, *per se*, is the chief factor to be considered, and that the age incidence of the disease commences earlier than the school age period, whilst he maintains that there is comparatively little direct evidence of infection at schools. He does not, however, appear to observe that the age incidence has changed with increase of school attendance.

This conflict of opinion on a matter of such importance to the community has now been brought within a narrower compass in connexion with an outbreak of diphtheria which occurred at Lewisham in the course of last year. Here, at any rate, we have a concrete instance wherein the question of school influence is capable of being put to the test; and we have before us certain documents that enable an opinion to be formed upon it. These consist of (*a*) a report, dated Nov. 16th, 1896, of the medical officer of health of the Administrative County of London presenting a report of Dr. HAMER on the outbreak in question, and (*b*) a report, dated January, 1897, of the medical officer to the London School Board dealing with the preceding. We do not propose to enter minutely into the details discussed in these papers, especially as the question has still to be dealt with by the County Council; but in view of more recent outbreaks in Camberwell and Wandsworth, in both of which places infection through school attendance has been highly probable, we feel it incumbent to direct attention to them without delay. The outbreak was limited to a small area of the Lewisham district, about a quarter of a mile square, and having a population of 7882 persons in March, 1896. During 1895 and the first half of 1896 there had been a disproportionate incidence of diphtheria upon this area, but from the twenty-seventh to the forty-fourth weeks of 1896 this disproportion was excessive — no fewer than 103 cases occurring within this small part of Lewisham out of 158 for the whole district. Dr HAMER found that the disease attacked children of school age in undue proportion, for whereas in the period from 1893 to the thirty-sixth week of 1896 the relative incidence on children aged three to twelve years was 58·5 per cent. of all attacked, from the thirty-sixth to the forty-fourth week of 1896 it was 73·6 per cent. He also showed that the comparative mortality at school age was higher by one-third in this "affected area" during the period named than it was for the whole of London in the years 1893–95. Analysing the facts more closely he showed that amongst families who were attacked the *first* to suffer were to be found in greater proportion at this school-age period, and that the proportion of such children ("first sufferers") was higher amongst attendants at the two chief schools of the district (the Lewisham Bridge Board School and the National School) than amongst those attending other schools or no school at all. He further found that particular classes in these schools yielded these cases; and including cases of sore-throat, which were known to precede diphtheria in a family, he was able to show that during the weeks named there was every ground for attributing much of the disease to school infection. Dr. SMITH traverses the arguments adduced by Dr. HAMER in almost every particular, but unfortunately he does not appear to have covered quite the same ground, so that the statistics of the two reporters are not strictly comparable. There is, however, one point which is most material to the issue that seems to have been ignored by Dr. SMITH, and that is in respect to the chances of infection, not among classmates only, but amongst the school children generally; whilst his conclusions—that, of 137 cases, in 116 the evidence is such as to exclude the school as the source of infection, and in the remaining 21 the evidence of such infection is insufficient—are quite at variance with those arrived at by Dr. HAMER.

It is, we think, much to be regretted that the medical officer of the School Board should have adopted so inflexible an attitude in respect to this question; nor can we agree with him that closing a school or certain classes in it where infection is probable would not diminish the risks of the spread of the disease. But, of course, if he adopts the view that the incidence of diphtheria upon school children is merely a fortuitous circumstance due to age influence and not to school infection, it is useless to attempt to convince him on the point. Meanwhile diphtheria spreads in the metropolis, and one potent factor in its spread, according to general opinion, is suffered to remain untouched. It is a serious responsibility that is thus entailed on those in authority, with whom may rest the power to check the course of this scourge of modern life and so prevent the sacrifice of the lives of many children.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—The annual general meeting of the Royal Westminster Ophthalmic Hospital was held on the premises on March 5th, Sir Charles Turner presiding. The report showed that during last year there were 558 in-patients, the number having been 468 in the preceding year; there were also 10,301 new out-patients and the total attendances of out-patients were over 28,000. The income was £2251 and the expenditure £2386. The chairman pointed out that the building fund, which had now been open for three years, had strong claims on the charitable public.

Annotations.

"Ne quid nimis."

THE CHOICE OF AN ANTISEPTIC IN MIDWIFERY.

WE publish in another column a letter from a practitioner signing himself "Antiseptic" and asking for information on various points as regards the use of antiseptics in midwifery. "Antiseptic" refers especially to the antiseptics he has himself used for washing out the uterus. We should like, in the first place, to emphasise the point that the fundamentally essential thing in applying the principles of antiseptics in the practice of midwifery is the thorough disinfection of everything that is to come into contact with the patient, more especially the hands of the attendant, before touching her. There are, of course, occasions on which it is necessary to wash out the uterus. But the washing out of the uterus after labour is only exceptionally necessary, and is certainly not part of the regular routine that should be adopted in every case in order to avoid the risk of puerperal fever. The same is true of vaginal douching after delivery. We suppose, although it is not stated in our correspondent's letter, it is rather with regard to deciding which is the best antiseptic to use for disinfecting the hands that he wishes for information. The three agents he mentions are mercuric chloride, mercuric iodide, and carbolic acid. There can be no doubt that, as regards practical results, much more depends on the thoroughness of the cleansing, followed by disinfection of the hands, than on the choice of this or that antiseptic from the above list. Certainly the great improvement as regards both morbidity and mortality in lying-in hospitals has been obtained with perchloride of mercury. It is stated, however, in Norris's "American Text-book of Obstetrics" that "some large clinics, such as those of Copenhagen and Vienna, yet cling to the use of carbolic acid, and obtain just as good results as those in which this drug has been supplanted by bichloride of mercury." The truth is that the personal factor must be remembered, as on this as well as on the particular antiseptic employed depends the thoroughness of the disinfection. We wonder if "Antiseptic" can call to mind his early experiences in the class of practical chemistry. For ourselves, we remember well that often after the lecturer had carefully described and performed the steps of some simple test there were almost always some members of the class who could not get the test to "come off," or who obtained some physical phenomena altogether different from what should have resulted, according to the teacher's description and demonstration. And what was the explanation? Why, in a large number of cases, simply dirty test-tubes. The student had not sufficiently washed his test-tube, or perhaps had failed to give it the final washing with distilled water before trying the test. The application of this illustration to the question of personal disinfection is obvious. With the same reagents and apparatus failure may result from want of thoroughness in practically performing the steps of what may rightly enough in many cases be regarded as a test. When the test does not give the desired result, or, in other words, when symptoms of puerperal septicæmia arise, the blame is not due to the antiseptic, if it be one of the three given by our correspondent, but rather to a want of thoroughness in using it. As between perchloride of mercury and mercuric iodide, the latter is much more expensive than the former, while perchloride of mercury has been clearly shown to have at all events so much efficiency that by properly using it for the hands the safety of the patient is practically secured. As a matter of detail, many prefer to use iodine water (two drachms of tincture of iodine to a pint of water) for washing out the uterus when, exceptionally, this may be required. We are inclined to regard it as a safer agent for the purpose than either perchloride of mercury or carbolic acid.

BEES IN MEDICINE.

WHEREVER the bee has found a home honey has almost invariably been used both for food and medicine. From the papyri we know that honey played not an unimportant part in the composition of many of the Egyptian medical potions, and H.H. Sir Bhagvat Sinh Jee, M.D., has told us in his recently issued History of Aryan Medicine, the *rôle* which honey took in the native pharmacopœia of India. Among the medical writers of the past who have alluded to its use may be mentioned Hippocrates and Galen. In the current issue of the *St. Bartholomew's Hospital Journal* Mr. John Gutch gives some interesting gleanings from old writers who have mentioned bees and honey in a therapeutic connexion. Although honey has been used as a medicament, it is not perhaps generally known that not only the sweet product of the bee, but the bee itself has been used in therapeutics. According to the author of the article quoted above, bees drowned in honey have been recommended for clearing the eyes, for staying vomiting, and as useful also for deafness. The curious injunction is given when using the medicine for clearing the eyes that the patient is to be bound, for such is the violence of the medicine that he cannot otherwise patiently endure it. The following remedy is given by Celsus: "The bodies of bees taken newly from the comb and powdered and drunk with Dierretick wine powerfully cures dropsy."

THE THERAPEUTICS OF THE GOOD SAMARITAN

IN last week's Parliamentary debate on the Greco-Turkish imbroglio the action of Greece in coming to the rescue of her Cretan compatriots was likened by the Leader of the Opposition to that of the Good Samaritan who relieved the wounded victim of highway robbery after the priest and Levite—typifying the Concert of Europe—had passed on unregardful of his sufferings. With the political application of the parable we have nothing to do any more than with the retort of the Leader of the House that the Good Samaritan would not have been admired for eighteen centuries if as a result of his intervention he had added largely to his personal estate. Our interest in the parable lies in its medico-historical aspect—in the treatment to which the wounded man was subjected and in the light it throws on first-century practice. The parable, we need hardly remind our readers, comes to us on the authority of what M. Renan calls "le plus beau livre qu'il y ait"—the most beautiful book in all literature—the work, we may add, of a Physician whose familiarity with Hippocrates has been proved by Hobart and Plumptre, and whose practice seems to have lain, at least for one memorable period, in the mercantile marine of the Mediterranean. Till recently the only version of the parable accessible to English readers represented this capable practitioner as reporting the Good Samaritan to have bandaged the victim's wounds—incised, punctured, or lacerated—and then to have poured into them oil and wine. That mistranslation continued to puzzle generations of the devout till the Revised Version put matters right by substituting "pouring on" for "pouring in"—the Authorised rendering having been adopted from a misinterpretation of the Vulgate, which gives "infundens" as the equivalent of St. Luke's *ἐπιχέων*, though "infundo" means to "pour upon" as well as to "pour into." The Good Samaritan's therapeutics are thus vindicated as conforming to the recognised practice of the time, whether Greek or Jewish. The bandage having been adjusted, it was saturated with a mixture of oil and wine,

an emollient and a stimulant, presumably to keep the cloth from stiffening while rousing the reparative or healing process. It was the practice employed in circumcision, as we read in the rule: "If there is no mixed oil and wine ready each may be added separately." Galen, writing about a hundred and thirty years subsequently to St. Luke, describes a paste, in which oil and wine are the principal ingredients, to be applied to wounds. The Elder Pliny, whose "Historia Naturalis" was nearly contemporary with St. Luke's Gospel, refers to the same practice. The Good Samaritan's therapeutics, as reported by St. Luke, were, indeed, *secundum artem;* and if they have caused any difficulty to the non-classical reader, that has been removed by the revisionist substitution of "pouring on" for the meaningless "pouring in."

PRESERVATIVES IN PHARMACY.

AN interesting and thoroughly practical paper on the Preservatives of Pharmacopœial Preparations was read before the Pharmaceutical Society by Mr. William Martindale on March 9th. Alcohol, he said, is not a germicide; when present to the extent of 20 per cent. by volume of absolute alcohol it has an inhibitory effect on the germination of most of the micro-organisms occurring in aqueous solutions of vegetable and animal substances, but the germs propagate readily as soon as it evaporates. Salicylic acid is the preservative employed for the official solution of hydrochlorate of cocaine, which contains 1½ per mille of the acid, with 10 per cent. of the cocaine salt. This solution, even if diluted with four times its volume of water, still keeps free from the fungoid growths to which cocaine solutions are so liable. Salicylic acid, however, cannot be added to solutions of either morphia or apomorphia intended for hypodermic use as it causes the formation of a crystalline deposit. Mr. Martindale's address contained some valuable suggestions on the preparation of dilute mercurial solutions. He especially objected to the addition of chloride of ammonium to solutions of corrosive sublimate, on the ground that white precipitate is liable to be deposited on dilution with common water, and most of the mercury may in time be withdrawn from the solution.

THE CONDITION OF CONVICTS IN THE PRISONS OF NEW YORK STATE.

THE Legislature of New York State have lately passed a law enacting that the convicts in their prisons shall not be allowed to work while under sentence at any trade or occupation whereby they may compete in any way with free labour. This state of affairs was brought about by the action of the American Federation of Labour, and practically condemns the convicts to solitary confinement. The effect of this law, even within the short time it has been in force, has proved most injurious to the health of the prisoners. Already a man who was confined in Sing-Sing has committed suicide as the result of the influence of compulsory idleness, and the authorities are at their wit's end to devise means of remedy for this unfortunate situation. As the law now stands the convicts are not allowed to do any description of work for the State. Exception is taken to such occupations as printing and bookbinding, and fault is even found with printing for the use of the prisoners only; in fact, their sole distraction is the exercise which they are allowed to take for a short time daily. It has been suggested that the men be taken out and put on the public roads improvements and fortifications, as is the custom in England, but there are so many difficulties in the way that this suggestion is declared to be unworkable. A long term of isolation has been conclusively proved to be hurtful in a high degree both to the mind and body of a man; it was found in England after the system had been thoroughly tested that long periods of solitary confinement weakened the minds of the convicts. In America some critics contend that the moral efficacy of any period of strict separate confinement is more than doubtful, and go so far as to assert in the present case that unless some measures are taken to give the prisoners work to occupy their time more asylums for insane criminals must be built. After all is said and done the object of criminal punishment is not vengeance but the improvement of the offender, and besides it is surely punishment to a lazy man to be compelled to work, to a drunkard to be compelled to keep sober, and to a dissolute man to be compelled to lead a clean life. The true conception of a prison, as we take it, is that of a hospital for the remedial treatment of depraved bodies and diseased minds. The mere temporary caging of the criminal like a wild beast is a protection to society for a time, but it is only for the time being; for when he is let out he is in most instances more dangerous to society than when he went in. The criminal should be treated as a man, and not as a wild beast. No one is in any way benefited by driving convicts crazy and making their lives miserable and useless. Humanity and sound economy both dictate that prisoners shall be engaged daily at something which will occupy their time and energies, and it is not enough that criminal jurisprudence should be humane, it should also be intelligent. The prisons and reformatories of New York State have for a long time taken high rank amongst like institutions in different parts of the world for the humane and intelligent manner in which they have treated their prisoners—in fact, in many respects they have acted as pioneers, and it is to be hoped that the present deadlock may be but temporary.

STILL THEY COME!

MESSRS. GUY, Beecham, Seigel, Page Woodcock, Williams, Hood, Clarke, and the rest of the nostrum-selling fraternity will have to take a back seat. A new constellation has arisen. We have seen the following statements in print, so they must be true! They are sworn to before solicitors, and the attestor in one case is a publican and in the other a schoolmaster; moreover, we regret to add, a parish schoolmaster. He has for nine years been suffering from pains in the stomach and bowels. The pain was of the most "excrutiating" (*sic*) nature, and night after night he was killed with a pain that doubled him up in the most painful manner. He had scores of bottles of doctors' medicine, with the same result—no relief, but constant pain. He also had a very serious case of bleeding from a bloodvessel bursting at the bottom of his stomach, and on Oct. 30th, 1896, he read one of Messrs. Forshaw and Snow's circulars and entered their shop. Here Mr. Forshaw at once "told me what I ailed—viz., inflammation of the mucous membrane of the stomach. He told me more than this—viz., that he could cure me. I determined to place myself in his hands, and he gave me a course of his excellent Infirmary Pharmacy Blood Purifier and Stomach Mixture and Digestive Extract. I went home and can honestly say that from the first moment I took the first dose of his mixtures I have never had one single moment of pain. Why is this? Simply because Messrs. Forshaw and Snow understood my case, and knew what would do me good and gave me it." The publican was in even worse plight. Instead of being killed every night, "life to me was becoming a burden, and every day became longer and my sufferings more severe." He was not content with bottles of doctors' medicine, but "went on trying first one doctor then another till I was as weak as a child." Then a light arose in the darkness and he read one of Messrs. Forshaw and Snow's pamphlets, and after taking one bottle of the Infirmary Pharmacy, &c., and a few doses more he was happy, cheerful, and full of fun and life. We may remark that the Infirmary Pharmacy has

nothing to do with the Bradford Infirmary, although the active partner in the firm, we are informed, used to be dispenser at the infirmary. We have not the least doubt that both publican and schoolmaster could have got the identical mixture at the infirmary, only it would not have been called such a long name, and, of course, would not have been puffed in pamphlets "left on the bar window." The rejoicing sufferers whose story is here set forth live in Bradford. Now at Leicester we expect this kind of thing, but that Yorkshiremen should be so confiding is remarkable.

THE ROENTGEN RAYS AS A DEPILATORY.

NUMEROUS writers, both in Europe and America, have published accounts of the injurious effects produced on the skin by a too prolonged exposure to the Roentgen rays, the symptoms varying in nature and intensity from "sunburn" to dermatitis, vesication, and ulceration. Loosening of the hair, sometimes carried so far as to result in baldness, was frequently observed, and this peculiar property of the rays has been ingeniously turned to useful account by Dr. Leopold Freund of Vienna in the case of a child, four years of age, who suffered from a pigmented hairy nævus covering almost the whole of the back. The patient's neck was in the first instance submitted to the action of the rays, and after ten exposures lasting two hours each the hair commenced to fall out, apparently in consequence of atrophy of the bulbs. Eight days later dermatitis was first observed. The child was shown at a recent meeting of the Gesellschaft der Aerzte of Vienna six weeks after the discontinuance of the treatment, and all the parts which had been exposed to the rays were then quite devoid of hair. The rays only act in this particular manner by slow degrees, from nine to twelve days being required for the development of the effect. It was found that the hair of the scalp was more easily attacked by the rays than the abnormal hair of the pigmented nævus. There is much reason to suppose that the Roentgen rays may therefore be a valuable addition to our methods of treating hypertrichiasis. In the course of the discussion on this case Professor Kaposi suggested that the first stage of the action consisted in the rays irritating the deeper bloodvessels of the skin, and that the hair subsequently came out in consequence of the nutrition of the skin being thus interfered with. He also remarked that the dermatitis caused by the Roentgen rays resembles that from which Alpine climbers suffer after exposure to the glare of sunshine reflected from snow or glaciers.

PHYSIOLOGICAL INFLUENCE OF MUSIC.

MM. BINET and J. COURTIER give in the *Revue Scientifique* an account of experiments made by themselves and others on human beings and animals of the effects of music on the heart and respiration. M. Patrizi, an Italian physiologist, had a patient with a wound in the skull which laid bare the brain. He was thus enabled to observe the actual effect of music on the cerebral circulation. Music occasioned an increase in the size of the brain itself. The effect on the cerebral circulation was variable, the vessels being sometimes constricted and sometimes dilated. At other times no effect was produced. MM. Binet and Courtier experimented on a musician. Isolated notes, chords in unison, and discords were first tried. Both major chords struck in a lively manner and discords quickened the respiration, the latter more especially. Minor chords tended to retard respiration. When melodies were tried it was found that all, whether grave or gay, produced quickened respiration and increased action of the heart. The lively tunes produced the greatest acceleration. The subject also sometimes unconsciously endeavoured to synchronise his respirations with those of the singer. In *rallentando* and *diminuendo* passages the respiration was retarded. Where the sound was wholly uncomplicated by emotional ideas, as in single notes or chords, the heart's action was accelerated, but not in so marked a degree as when a melody either grave or gay was played. During operatic pieces or those well known to the subject the acceleration attained its maximum. The subject had a strongly marked capillary pulse. The influence of music on the capillary circulation was tested by a plethysmograph attached to the right hand. The capillary tracing usually showed a diminution of pulsation. This diminution was occasioned by the sound of single notes, chords, or discords. In sad melodies, especially minor ones there was almost no diminution, whilst in lively airs the diminution was marked.

THE REGISTERS OF MEDICAL PRACTITIONERS AND OF MEDICAL STUDENTS.

THOSE who are interested in the numbers of medical men will like to know that the Medical Register and the Register of Medical Students for the year 1897 are now published and may be obtained from the publishers, Messrs. Spottiswoode and Co., 54, Gracechurch-street. As regards the principal facts of the Medical Register for 1897 they have been already published by us, through the kindness of the Assistant Registrar, on Feb. 6th. Speaking summarily, they show that the new registrations in 1896 were 1385, as compared with 1446 in the preceding year. Nevertheless, the numbers on the present Medical Register are 34,478, as compared with 33,601 in the preceding year. Coming to the new registrations of medical students in 1896, and therefore in the Register now published, we find them to be 1741, as compared with 1838 in 1895. Of these registrations 919 were in England, 557 in Scotland, and 265 in Ireland. The respective Registers are full of various information and carefully prepared tables. They supply much material for reflection, and certainly none for anxiety as to the supply of medical men. Not the least interesting part of the Students' Register is the names of the various schools from which the students date as commencing medical study.

THE MEDICAL SOCIETY OF LONDON.

THE Medical Society of London celebrated its 124th anniversary on Saturday, March 6th, by a dinner in the Whitehall Rooms of the Hôtel Métropole. The President, Mr. Reginald Harrison, occupied the chair, and 130 Fellows and guests were present. Among the latter were Lord Lister, President of the Royal Society; Sir William MacCormac, President of the Royal College of Surgeons; Dr. Dickinson, President of the Royal Medical and Chirurgical Society of London; Mr. Butlin, President of the Pathological Society; Dr. Savage, President of the Neurological Society; Mr. Bigham, Q.C., M.P., Mr. Lawson Walton, Q.C., M.P., Professor Bridge, Sir William Mackinnon, Sir J. Crichton Browne, Sir William Dalby, Sir Dyce Duckworth, Sir William Roberts, and Dr. Farquharson, M.P. The toast of "The Sister Societies" was proposed in a humorous speech by Mr. Frederick Treves. Lord Lister, in rising to respond, received an enthusiastic ovation, and in referring to the peerage which Her Majesty had conferred upon him he said that it was an honour entirely unsought by him, and that in fact he was not asked beforehand if he would accept the honour. The kind way in which the members of his own profession had hailed his admission to the House of Lords had been inexpressibly gratifying to him. Sir William Dalby, in proposing the toast of "The Visitors" twice "brought down the house," first by his graceful congratulations to Sir William MacCormac on his recovery from his recent illness, and afterwards by a sympathetic allusion to the "cruel persecution" to which Dr. Cullingworth had been subjected. The toast was responded to by

Mr. Butlin and Mr. Bigham. A capital musical programme was provided, and the dinner was one of the most successful in recent years. The Royal Medical and Chirurgical Society last year instituted a dinner which promises to be an annual function, and the other societies might well occasionally imitate the example thus set them by their elders.

THE PREVENTION OF TUBERCULOSIS IN NEW YORK.

THE Health Department of New York has taken the step of declaring pulmonary tuberculosis to be an "infectious and communicable disease dangerous to the public health." It has also ordained that notification of each case of the disease coming under the notice of medical practitioners in the city shall be made within a week of its first coming to the knowledge of the practitioners, and that public and private institutions and dispensaries shall also notify all cases heard of; but how far the duty is to be one for which remuneration is to be given is not stated. The provision of hospital accommodation for the poor suffering from the disease is enjoined by the medical members of the department, these poor sufferers being regarded as active sources of danger to the community. All institutions taking in cases of the malady are to be systematically and officially inspected, and the people generally are to be educated to regard the malady in the grave light in which it is medically held, and to take in consequence adequate means for its repression. A close supervision over individuals suffering from the disease in crowded localities and workshops is to be maintained. The medical members of the department regard it as quite feasible, even in face of the present estimate of 20,000 tuberculous citizens in New York, to restrict tuberculosis within the narrowest bounds, and eventually perhaps almost to exterminate it. Future comparative records from New York will prove to be of interest in this connexion. To our way of thinking the whole scheme is Utopian.

THE PHYSIQUE OF THE ARMY.

WE are very glad to see that the question of the physique and stamina of the officers and men of our Army is attracting attention. It is a subject of great and growing importance to which we have from time to time referred in the columns of THE LANCET for some years past. We are living in an age when the strain on physical and moral qualities, of which competitive examinations take little or no account, is often very considerable. Manliness, vigorous health, physical activity, and complete integrity of the sense organs in themselves count for a great deal in the officers of our Army, and they are usually accompanied by coolness of judgment, a dogged indifference to danger, and powers of endurance—the very qualities on which officers and men have had very frequently to rely of late in India and Africa. A competitive examination, we have always held, should be competitive all round, and the possessor of these physical qualities or of any physical superiority should, in the interest of the State and the Army, reap some advantage from them. They enable an officer to endure fatigue, help him to resist disease, and inspire trust and confidence in the men he has to lead, and these are the very qualities that eminently fit a man for the military service. It is notorious, of course, that great mental and physical activity are often combined in men of relatively small stature; but these, if strong, healthy, and well proportioned, need not—and, indeed, could not, considering the numbers they represent—be excluded from competing for the military services. As it is at present, however, we are excluding a number of most desirable candidates because they mature mentally very slowly and are not bookworms or have not those studious habits which are very distasteful at the ages at which candidates are taken for the Army and Navy. The Board of Visitors to Woolwich and Sandhurst in their last reports very wisely, in our opinion, express a hope that the military authorities will seriously consider whether it be not possible to introduce into the examinations into and out of both the Royal Military Academy and the Royal Military College a test for the physical capacity of the candidates. Although most people are agreed on the principle, it is when we come to apply it to practice that difficulties arise. And it is in this respect that we may call attention to a communication in the *Times* of the 8th inst. for some practical suggestions as to how the regulations for admission into these institutions might with advantage be amended with the view of securing this end.

THE NEW CHAIRMAN OF THE LONDON COUNTY COUNCIL.

WE congratulate Dr. W. J. Collins on attaining to the honourable position of Chairman of the London County Council, the most important municipal post, after that of Lord Mayor of London, in the world. The work of the London County Council in relation to medical and hygienic matters has been above reproach, so that we record with particular pleasure the election of a medical man to preside over its deliberations for a time. Of Dr. Collins's great abilities no one who has come into contact with him can have any doubt, while we believe that he will also display judicial impartiality and official dignity in the discharge of his new and onerous duties. With our congratulations to Dr Collins on his election we should like to couple a word of thanks to his predecessor. Sir Arthur Arnold was an excellent chairman from every point of view, and carries with him into the comparative privacy of ordinary membership of the Council the well earned respect of the citizens of London.

THE VAGARIES OF VISION.

ON Friday evening, March 5th, Mr. Shelford Bidwell delivered before the Royal Institution a lecture on some curiosities of vision, and performed a number of experiments to illustrate the phenomena known as persistence and recurrence of vision. Perhaps the most interesting part of the lecture was that in which the lecturer attempted to throw some light upon a curious little optical toy which was brought before the public about a year ago, consisting of a number of discs of cardboard having black lines drawn upon them in such a manner that when the discs were rotated the black lines would appear as continuous bands, which bands appeared to the eye to be coloured, the tint varying according to the rate of rotation. The lecturer referred to some simple experiments which he had made in which black lines were made to appear as red. If a piece of brown paper is taken, a hole cut in it about half an inch square, and a pin fastened across the opening midway between and parallel with two sides with some stamp paper, and the whole moved backwards and forwards before a lamp, the pin will appear to have a border of red. Again, in the case of a printed book if placed before the eyes and alternately screened and exposed, either with the hand or a piece of cardboard, the black lines will appear for about a second to be of a red colour, the experiments showing that whenever a bright image falls upon the retina after short period of darkness the image appears with a coloured border which, under ordinary conditions, is of a red colour. The optical toy referred to is constructed on the principle of alternate periods of light and darkness, and whatever may be the cause of the red colour appearing in Mr. Shelford Bidwell's experiments it is probable that it bears some near relation to the varying bands of colour on the rotating discs. It is not everyone who will be able to see these effects upon a first

experiment, because the sensitiveness of the eye to colour is sometimes very feeble, but in almost all cases sensitiveness can be strengthened by practice. In the study of optical effects, too, the fact cannot too often be emphasised that we must know exactly what to look for and also the right spot to which the attention should be directed. We believe that an instrument called the "Chromoscope" which has been designed to show the effects referred to, can be purchased from Messrs. George Philip and Son of Fleet-street.

THE TWELFTH INTERNATIONAL CONGRESS OF MEDICINE.

THE committee in charge of the organisation of the Section of General Pathology and Pathological Anatomy desire to receive as quickly as possible the titles of any communications which our readers may be intending to send to the International Congress at Moscow, as well as brief abstracts of the principal conclusions to be drawn from the papers. The following questions have been suggested by the committee for discussion, and views upon them will be submitted by the scientific authorities whose names are severally appended: The Botanic Specificity of Pathogenic Microbes (Professor Hueppe of Prague), the Pathology of Thrombosis (Professor Cornil and Dr. Marie of Paris), the Origins of Different Forms of Diabetes (Professor Lépine of Lyons and Professor Minkowsky of Strasburg), the Pathology of Myxœdema (Professor Brissaud of Paris, Professor Ewald of Berlin, and M. Gley of Paris), the *Rôle* of Antitoxins in the Production of Artificial Immunity (Professor Behring of Berlin and Professor Bouchard of Paris), the Pathology of Inflammation and the Parts Played by Bloodvessels and Parenchyma (Professor Stricker of Vienna and Professor Klemensiewicz of Gratz). All correspondence with regard to the section should be addressed to M. G. Dourdoufi, Pretschistinsky boulevard, Jerusalmskoe Podvorie, Moscow.

THE PROPOSED LEGISLATION FOR HABITUAL DRUNKARDS.

IT is sincerely to be hoped that the Government will be able to carry out during the current session their intention of amending the laws relating to the treatment of habitual drunkards. Among members of the medical profession there is little, if any, important difference of opinion upon this subject. The necessity for some system of restraint and tutelage is generally admitted, and if no particular method has up to the present time been actually employed this is assuredly not from the want of either will or occasion. In the meantime certain recognised plans of treatment are becoming discredited. The lunatic asylum and the dipsomaniac are frequently found to be mutually unsuitable, and this incompatibility is absolutely certain where the habit of drunkenness does not amount to lunacy in the strict sense. Nor is the common prison the proper place of seclusion for such persons. This part of the subject was recently discussed at a meeting of the Society for the Study of Inebriety, when Mr. J. J. Pitcairn, assistant surgeon to the Holloway and Newgate prisons, expressed himself strongly against the system of prison detention, and showed that in many cases the prison ward is for the drunkard virtually a form of hospital, while, on the other hand, the terms of incarceration assigned by law to such inmates are too short to ensure any practically curative effect. The same writer, nevertheless, gives utterance to a widespread impression that the prolonged detention of confirmed inebriates in specially adapted institutions would go far to remedy this diseased propensity. Side by side with this arrangement must go, of course, an arrangement for the transfer to other hands, for so long as may be necessary, of their domestic and business interests. The first part of this plan is certainly desirable if it can be carried out, and there is little doubt that private enterprise, guided, of course, by legal regulation, would prove equal to the task. Whether it is incumbent upon Governments themselves to make provision for the charitable maintenance of such institutions is another matter, and it is open to question whether such an obligation should be enforced. Herr Schlangenhausen regards the establishment of asylums for drunkards in Great Britain and Ireland as only a question of time;[1] but the ratepayer would probably remind him, if consulted, that it is also a question of money and a subject for discussion. Even this part of the ideal scheme may by degrees be brought within the circle of possible attainments, but its execution must largely depend for some time to come on the energy of private enterprise. The other part, which has to do with the transfer of responsibilities which can no longer be regularly exercised by the drunkard, entails no public burdens. Our views upon this subject were briefly stated in THE LANCET of Dec. 5th, 1896. The system of trusteeship there suggested conforms in its general purpose, though not necessarily in all details, to that of Curatel, which was fully explained in connexion with our reference to Herr Schlangenhausen's opinions. We believe that the true solution of the problem will be found when this principle of trusteeship is embodied in a simple and effective mode of legal procedure.

CEREBRAL SURGERY.

IN a recent paper by Professor Hitzig, an abstract of which appears in the *Neurologisches Centraiblatt*, an account is given of four cases of tumour of the brain in reference especially to the non-success of operation. The first case was that of a man, aged thirty-four years, who had received a blow from a hammer eight years before he came under observation. He had weakness and convulsive movements in the right arm and, later, weakness of the right leg and headache, but no sickness or optic neuritis. He was thought to have a cortical tumour, but none was found at the operation, although there was evidence of increased intra-cranial pressure. Three weeks later there were papillitis and sickness and convulsive movements of both legs. He rapidly passed into an unconscious condition and died. A large sarcoma was found apparently commencing in the centrum ovale, thence spreading into the cortex and also the corpus callosum. The second case was that of a woman, twenty-three years of age, who had vomiting, giddiness, gradual failure of vision in the right eye and also in the left. There was internal strabismus first on the left and later on the right side. There were optic neuritis and slight spastic paralysis of the left extremities and weakness of the right side of the face. It was supposed that there was a tumour in the cerebellum, but an operation did not confirm this. The patient afterwards died, and at the necropsy a large cystic glioma was found in the right frontal lobe which had flattened out the optic nerves, the third, the sixth, and the fifth nerves, and had compressed the right half of the pons. The third case was that of another woman, thirty-four years of age, who had attacks affecting the right arm beginning in the fingers and slightly affecting the head and the leg without loss of consciousness. There was rather laboured speech and slight right-sided weakness in the arm. Operation failed to reveal any tumour, and three years later her condition remained unchanged. The fourth case was that of a man who three years before had had an injury to the right side of the head, and who suffered from giddiness and increasingly severe headache, with subsequent right-sided paresis. This became permanent, and there were also right-side Jacksonian attacks commencing in the foot. There was tenderness on the left

[1] Vide THE LANCET, Dec. 19th, 1896.

side of the head, and at the operation a large endothelioma was removed. This apparently grew from the dura mater, and covered a large area of the convexity of the hemisphere and compressed the central region and the gyrus fornicatus. Death followed from shock.

ROYAL BOTANIC SOCIETY OF LONDON.

AT a meeting of this society held on March 6th Mr. John Birkett, F.L.S., in the chair, the Duke of Bedford, Sir G. Hamond Græme, Bart., and nineteen others were elected Fellows. A paper was read by Mr. Martindale calling attention to the great desirability of establishing in London an institution for the purpose of teaching botany similar to those in existence on the Continent, and proposing that the Council should take charge of the scheme and utilise a portion of their ground for the erection of the necessary buildings. From its central position and the fact of all the requisite material for study being at hand in a living condition, no other site in or near London would be so suitable for the purpose. The great fault of the present system of botanical teaching in England outside the medical schools and universities was that too much attention was given to botany solely with the object of enabling students to pass examinations, while economic and physiological botany was scarcely touched upon. If a young German were desirous of emigrating, previously to doing so he could attend a short course at one of the institutions at home and learn all that would be of most use to him about the grasses, fruits, and vegetable products of the country he proposed to settle in; but in England there was no such means of acquiring knowledge of this kind, and it was for the purpose of supplying such a deficiency that the establishment of the institute was proposed. Among those present who gave the scheme their hearty support were Professor Oliver of University College, Mr. D. H. Scott of Kew, Professor Henslow, Professor Greenish, Mr. M. Carteighe and Mr. E. M. Holmes of the Pharmaceutical Society.

A SUCCESSFUL SOCIETY!!

MR. STEPHEN COLERIDGE, on behalf of a so-called "anti-vivisection" society, has written to His Royal Highness the Prince of Wales concerning "hapless dumb animals" in London "*that daily and hourly are slowly cut up alive without even the pretence of anæsthetics.*" It is needless to say that any such proceeding is wholly illegal, and we are inclined to ask how it is that a society which has collected subscriptions from the public for many years past has not succeeded in convicting the criminals who are guilty of such atrocities. Mr. Coleridge is, we believe, a trained lawyer, and must know that "hearsay" is not evidence, and we hope that he would not venture to make such a statement to the Heir Apparent unless he believed he were prepared to justify not merely the general import but the letter of it. Mr. Coleridge appears to us to be on the horns of a dilemma. If he has knowledge of animals being "cut up alive without even the pretence of anæsthetics," he and his society are morally *particeps criminis* unless they make an attempt to obtain a conviction. If he has no such knowledge, he has attempted on inadequate ground to deprive the sick poor, whose welfare the Prince of Wales has so keenly at heart, of the stream of charity which is flowing towards them. But we take it that Mr. Coleridge has not succeeded in misleading anybody, and his amiable utterances will be regarded as merely due to poetic phrenzy gone sour. The anti-vivisection societies by their intemperate and exaggerated statements have gradually rendered the public immune to the poison which they are engaged in disseminating. They have never obtained a conviction for any offence against the Vivisection Act. They have not succeeded, happily, in arresting the legitimate pursuit of knowledge, and we venture to predict that this last utterance will have no influence whatever in lessening the contributions to the Prince of Wales's Fund. The Society for the Prevention of Cruelty to Animals can point with some pride to the successful crusade which it has forwarded. The anti-vivisection societies have had no solid success, and never can have any. One conviction would do more than millions of silly handbills and leaflets. The medical profession equally with the public would rejoice at the punishment of the perpetrators of the atrocities which Mr. Coleridge alleges take place daily and hourly. But until such conviction has been obtained we must continue in our belief that Mr. Coleridge's statement is absolutely devoid of any foundation whatever.

OPEN SPACES ABOUT BUILDINGS IN LONDON.

DR. J. F. J. SYKES, medical officer of health of St. Pancras parish, has presented to the vestry a valuable report on the powers and duties of the vestry in relation to the inspection of tenement houses, a term which, as defined in the existing by-laws of the vestry, denotes houses "let in lodgings or occupied by members of more than one family," and "'tenement' means any room or rooms in a tenement house let as a dwelling or lodging or for the use or occupation of a tenant." In commenting on the by-laws which direct that 400 cubic feet of air must be available for each person occupying a room "used both as a sleeping apartment and for some other purpose," while 300 cubic feet are deemed sufficient for each occupant of a room used exclusively as a sleeping apartment, Dr. Sykes recommends the adoption of a single minimum standard of cubic space, and suggests 400 cubic feet for all purposes, two children under ten years being reckoned as one adult. An addendum to this report deals with the subject of open spaces about buildings, and contains the disquieting statement "that there is a prospect that in course of time the whole of the open spaces about buildings may disappear." It seems that according to the London Building Act, 1894, in a new domestic building abutting upon an old street the open space to be provided to the building may be entirely covered in up to a level of sixteen feet above the adjoining pavement, and the consequence of this permission is that old houses possessing yards, areas, or open spaces in some form at the front or back, or both, are being rebuilt in such a manner that the whole of the previously vacant area is covered with a structure having a height of two or three storeys. The by-laws and regulations of the County Council and sanitary authorities are devised so as to cause drainage to be excluded from or placed outside of domestic buildings, but they seem to be rendered useless by a Building Act which enables a domestic building to embrace the whole of the drainage of the premises within its external walls.

TAKA-DIASTASE IN DYSPEPSIA AND GOUT.

TAKA-DIASTASE is an inodorous brown powder which acts energetically on starch, digesting it and converting it into sugar. Its discovery was the result of a lengthy investigation undertaken by a Japanese chemist named Takamine, who, while engaged in laboratory work in Glasgow under Professor Mills, F.R.S., was led to study the phenomena of malting, and subsequently continued his researches in Japan. In the result he found that a fungus, Eurotium oryzæ, of the Aspergillus family, when grown upon common bran, has a remarkable power of producing diastase, which can be separated from the bran by washing and percolation. A full account of the nature and properties of the new substance has already appeared in our columns.[1] Diastase

[1] THE LANCET, May 25th, 1895, p. 1332.

exists in ordinary malt, and effects the transformation of the starch of the grain into sugar, which is the first stage in the production of alcohol. In the animal economy the digestion of starch is accomplished by means of a special principle contained in the saliva, and when the natural secretion is either insufficient in quantity or inactive, giving rise to certain forms of dyspepsia, the deficiency may to some extent be remedied by the use of one or other of the numerous preparations of malt. Malt, however, is too saccharine for some gouty and dyspeptic patients, and for them Mr. Armstrong of Buxton, writing in the *Liverpool Medico-Chirurgical Journal*, recommends taka-diastase in doses of from three to five grains, given in powder with or immediately after meals. He has used it with excellent results in a considerable number of cases, both of amylaceous dyspepsia and of the form of gout which seems to be associated with that condition. He finds that flatulency and acidity are greatly diminished, that there is less strain on the intestinal digestion, that the gouty symptoms are much relieved, and that not the slightest discomfort, loss of appetite, or digestive disturbance is ever produced in consequence of the treatment.

THE INSPECTION OF MEAT AND MILK IN CANADA AND THE UNITED STATES OF AMERICA.

THE Provincial Board of Health of Ontario has issued, through Messrs. Warwick Brothers and Rutter, of Front-street, Toronto, a pamphlet giving a variety of information useful to those who are interested in the quality of our meat-supply. The importance which the question has for this country sufficiently appears from the fact that during nine months of 1896 we imported 436,223 cattle, of which the United States sent 303,159, and Canada 71,670; while the bacon from the United States during the same nine months amounted to 207,000,000 pounds. In 1896 the Legislature of Ontario passed an "Act for the Inspection of Meat and Milk Supplies in Cities and Towns," empowering municipal councils to establish public slaughter-houses and authorising local boards of health to take measures for ascertaining the purity of public milk-supplies and the general health of the cows; local boards are further authorised to provide for the testing of every such cow with tuberculin by a veterinary surgeon. Councils or boards availing themselves of the powers conferred by the Act are required by it to conform to the regulations in that behalf from time to time adopted by the Provincial Board of Health, and with a view to encouraging the introduction of meat and milk inspection the Provincial Board has now published a description of a slaughter-house suitable for a town population of 5000 persons, together with a plan, an elevation, and an estimate of cost. In the testing of cows with tuberculin "a 10 per cent. solution of normal tuberculin is to be injected to the amount of from one to four cubic centimetres according to age of animal. ..... The temperature must thereafter be taken regularly every three hours for a period of from twelve to fifteen hours. ..... Any notable rise of temperature indicates the existence of tuberculosis." Cows that give the tuberculin reaction, if they are wasting and show clinical signs of lung disease, shall be destroyed and the carcasses safely disposed of; but if they are in fair condition they may be either fattened as speedily as possible for slaughter, or their milk, after boiling for half an hour, may be given to pigs or calves. The pamphlet concludes with a description of the inspection of meat at Buffalo in the United States, and is signed by Dr. P. H. Bryce, Secretary to the Provincial Board of Health of Ontario.

THE public meeting to promote the National Jenner Memorial is fixed for March 31st. The chair will be taken by the Duke of Westminster.

THE festival dinner of the Irish Schools' and Graduates' Association will take place at the Café Monico on Wednesday, March 17th, Dr. Alexander Macalister, F.R.S., occupying the chair. The guest of the evening will be Lord Lister, P.R.S., and amongst those present will be Sir John Gorst, Sir Algernon West, K.C.B., Professor Jebb, M.P., Mr. Marcus Stone, Sir Ambrose Shea, and Professor Clifford Allbutt.

WE regret to announce the death on the 10th inst. of Dr. George Bretherton Barron of Southport. Dr. Barron, who was a member of the Council of the British Medical Association, was an admirably typical example of the general practitioner of this country, and we hope to be able to publish a record of his life and work in a future issue.

THE Medico-Psychological Association have appointed May 3rd for the next examination for their certificate in nursing and attending on the insane. April 5th will be the last day upon which candidates can enter their names. Schedules may be obtained from the registrar, Dr. Spence, Burntwood Asylum, near Lichfield.

THE Festival Dinner of the National Hospital for the Paralysed and Epileptic (Albany Memorial) will be held in the Whitehall Rooms of the Hôtel Métropole on Friday, April 2nd, when H.R.H. the Duke of Connaught, K.G., will preside.

DR. G. H DARWIN of West Didsbury, Manchester, has been selected for admission as a Knight of Grace of the Order of the Hospital of St. John of Jerusalem in England.

PROFESSOR CHARLES KELLY, M.D. Lond., has resigned the Chair of Hygiene in King's College, London, after a tenure of office of eighteen years.

LITERARY INTELLIGENCE.—The Rebman Publishing Company, Limited, announce that owing to a fire at their binders a large consignment of the "American Year-Book of Medicine and Surgery," issue of 1897, edited by Dr. George M Gould, has been completely destroyed, in consequence of which they regret that they will be unable to deliver subscribers' copies for about three weeks.

PRESENTATIONS TO MEDICAL MEN.—Mr. Duncan Fletcher, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been presented by his friends, on leaving the Isle of Man, where for fifteen months he was a medical officer at the union Mills lunatic asylum, with a silver-mounted Tantalus, containing cut-glass spirit decanters. — Mr. A. McLeod Ross, M.B., C.M. Edin., F.R.C.S. Eng., of Aigburth-road, Liverpool, has been the recipient from members of the Brunswick Class, No. 3 of the St. John Ambulance Association, of a handsome double set of carvers in a case, in appreciation of his instructive lectures to the class. — The members of Court Prosperity, 1762, Ancient Order of Foresters, Nottingham, have presented Mr. Joseph Thompson, L.R.C.P. Lond., M.R.C.S. Eng., who has been associated with the court for upwards of twenty-five years as medical officer, and who is now relinquishing that post, with a valuable sterling silver salver, beautifully engraved, with an appropriate inscription of the presentation.—Dr. Alfred M. Saunders, on the eve of his leaving Downby, Orkney, was entertained at dinner on the 18th ult. by a number of friends at the Smithfield Inn and presented with a large marble clock and, for Mrs. Saunders, a silver cake-basket, as testimonials of their social gifts and the professional ability and courtesy shown by him during the seven years he had resided at Downby.—Mr. R. T. Cæsar, jun., L.R.C.P. Lond., M.R.C.S. Eng., of Maidstone, has been the recipient of a handsome oak stationery case from the boys attending the ambulance instruction in connexion with Sir Charles Booth's Trust continuation classes, as a token of appreciation of the course of ambulance lectures he had given them.

The Lancet Special Commission

ON THE

METROPOLITAN WATER-SUPPLY.

IV.[1]

THE LAMBETH WATERWORKS COMPANY.

History.

THE early history of the Lambeth Waterworks Company shows how very rapidly an excellent business was built up by a number of men who gave their time and energy to a work which supplied a very obvious want.

The first meeting of the original founders of the Company was held in April, 1785. A list had been prepared of the owners of over 600 houses who wished to be immediately supplied with water. Another list was handed in of the occupiers of another 600 houses, who, it was believed, would be glad to have water as soon as they saw what a convenience it was to their neighbours. At the same meeting an estimate as to the probable cost of the undertaking was submitted, and it was calculated that a profit of 12 per cent. and upwards could easily be paid; but it was decided that the projectors should not flatter themselves with an immediate advantage from the work to the extent that their own calculations seemed to hold out. It was resolved that this was not a visionary scheme, but a "business suggested and taken into consideration on substantial grounds by men capable of judging both of the expense and effect." A subscription list was opened, and it was decided at once to apply for an Act of Parliament. Mr. White, a clerk to the House of Commons, seems to have been the Company's Parliamentary agent. Sir Joseph Mawbey, one of the members for Surrey, and the Rector of Lambeth helped to draw up the petition, which was signed by those of the inhabitants who wished to be supplied with water. An Act incorporating the Company was obtained and received the Royal Assent on July 9th, 1785, on which day the proprietors appointed to meet at 2 o'clock at the New Inn near Westminster Bridge, in accordance with the statutory directions of the Act of Parliament.

The work was rapidly taken in hand. Premises were obtained in Belvedere-road, near the site of the present Waterloo Bridge, which was not then built, and nearly opposite to Hungerford Market. A steam engine was put up, but it was not at first capable of supplying a higher service than 42 ft. above the Thames high-water mark. Wooden pipes were used for conveying the water. The proprietors showed great attention to the details of their business and printed and distributed handbills among the inhabitants of Lambeth to say that after the following Christmas they would be glad to supply anyone who lived within reasonable distance of their mains. Letters were also written to certain fire assurance companies asking them if they would like to take part in the expense necessary for keeping a fire engine ready to work. In this application the Company were not successful, but the request shows, it must be admitted, excellent business instincts.

At the end of the last century there is no doubt that a water-supply was urgently needed in Lambeth, and requests were sent to the Company asking them to extend their area of supply as quickly as possible. In 1790 some of the inhabitants of St. George's-fields wrote to say that unless they were speedily supplied with water they would have to leave their houses, as no lodgers would remain with them if they could not get a supply. The work of development proceeded so rapidly that in 1791 the clerk reported that they could not obtain small pipes as quickly as they wanted them. In 1800 some of Watts's improvements were adopted for working the engine which was then in use.

The early records of the Company contain instances of people who clandestinely laid on the water to their houses from the Company's mains. In such cases the Company acted with great vigour. Thus, in the case of one Mr. Green, who supplied his neighbours from his own tub, it was decided "that the ferril that serves the house be drawn, and that the water be not laid on again until the several houses reported to have been supplied laid down separate pipes." The Company's Act enabled them to impose a penalty of from £50 to £1 a day for stealing water. One man who was caught doing this was called to a meeting of the Board and informed of the penalty to which he had rendered himself liable. He pleaded that if it were imposed it would "materially injure his circumstances, and that he had a family of six children." The matter was settled by the culprit paying the arrears of water rent and giving £5 to a charity. In another case the directors agreed to give an informer half of any sum which might be obtained from an individual who had taken the water without paying for it.

The Company gradually extended their area, and in 1802 it was decided to go as far as The Horns, Kennington, that an ample supply might be given to "that respectable and populous neighbourhood." In the same year it was decided that a certain number of 10-in. iron pipes should be laid every year, provided that the outlay did not interfere with the dividends; and in 1816 it was decided to use only iron mains from that date. In the year 1805 a new 24-horse power engine was erected and a fixed instrument called a "dolphin" was put over the mouth of the suction pipe which conveyed water from the river. The dolphin took the place of a floating rhomboidal fender which had previously been used. The Company did not remain entirely without rivals. In 1805 the South London Waterworks were established. At first the relations between the Companies were friendly, and two years after their formation the Lambeth Company offered to supply some water which their rivals were unable to do in consequence of the destruction of their engine by fire. A few years later, however, there was a fierce competition between the Companies and this raged for some years.

After the building of Waterloo Bridge many new streets were made in a southerly direction, and the Company at once put an iron main in the direction of the Obelisk, St. George's-fields. From the first the financial arrangements of the Company seem to have been made with a view to the development of a big business, and money which might have been paid in dividends was used for paying the expenses incurred in extending the area of supply. In 1819 a resolution was passed by a committee of the proprietors that it would be disastrous if it should happen from the "impatience of some proprietors" that they should be induced to break through their rule of extending the business and draw money out of the concern; it would either "shackle" their proceedings or compel them to get into debt. In that case the committee thought that the sun of their prosperity would very soon set.

The proprietors took a keen interest in the reputation of the water they supplied, and in 1824 the solicitors of the Company threatened one Mr. Keys, a plumber, for his interfering with their customers "by defaming their commodity." On the other hand, Mr. Mathews, who wrote in praise of Thames water, was rewarded by receiving the sum of five guineas.

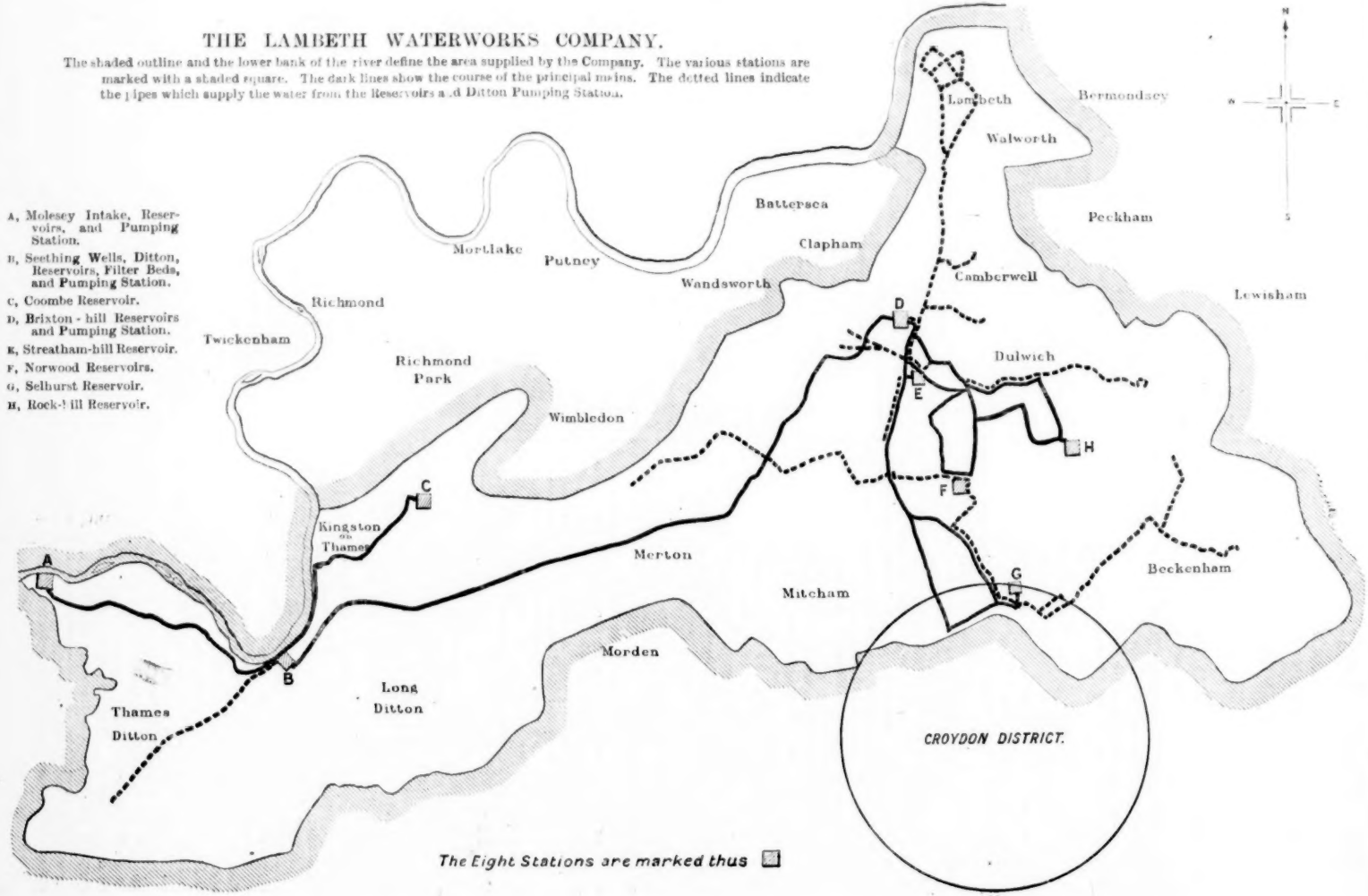
In the year 1831 it was decided to buy some land on high ground and to make a "filtering apparatus," and some land was bought on Streatham-hill—the site of the present reservoir. Two years later the ground on which the present Brixton pumping station is situated was bought, and it was decided to lay down an iron main from the works to the new reservoir which had been made at Brixton. An Act of Parliament was obtained in 1834 and the share capital of the Company was increased to £143 800. Up to that time the proprietors' capital had been limited to thirty-two shares of £150 each.

The outlying districts south of the Thames which were not supplied by the Company obtained their water with difficulty. The poorest people were supplied from water-carts and had to pay from ½*d.* to 2*d.* a pail for it. A great many petitions were sent to the Company to ask them to extend their supply. Complaints as to the insufficiency of the water-supply came from districts as far apart as Kingston and Beckenham, and the Company resolved to extend their business, to abandon their original works, and to remove their intake higher up the river. This decision was come to in 1847 and the Company were re incorporated in 1848, and the Act authorised the construction of works at Seething Wells, Ditton, and gave them power to extend the area of their supply. The works at Ditton were opened in 1852, and the directors justly prided themselves on being the first company which resolved

[1] Nos. I., II., and III. were published in THE LANCET of Feb. 20th and 27th, and March 6th, 1897, respectively.

THE LAMBETH WATERWORKS COMPANY.

The shaded outline and the lower bank of the river define the area supplied by the Company. The various stations are marked with a shaded square. The dark lines show the course of the principal mains. The dotted lines indicate the pipes which supply the water from the Reservoirs and Ditton Pumping Station.



to obtain their supply from a less impure source by going higher up the river. In 1852 the other Metropolitan Water Companies which took their water from the Thames were compelled by an Act of Parliament to move their intakes to some point above the tidal portion of the Thames. At this time the Lambeth Company had already done this, a fact which must always be remembered to their credit.

In 1871 the Company decided to remove their intake from Seething Wells still higher, because the water at Seething Wells was discoloured and turbid whenever the rivers Mole and Emmett were in flood. An Act to enable the Company to move to West Molesey was obtained, and subsiding reservoirs and pumps were erected there and the works completed in 1874. During the progress of the excavations at West Molesey it was discovered that there was a quantity of water in the gravel, and this was used as an additional source of supply. The dates of the Lambeth Water Company's Acts, besides those above mentioned, are 1848, 1856, 1869, 1871, 1883, and 1886.

Present State: General Description.

The Lambeth Waterworks Company supply Molesey, Ditton, part of Wimbledon, Balham, Brixton, Streatham, Lambeth, Walworth, Dulwich, and Sydenham.

The sources of supply are: (1) the Thames at West Molesey; (2) gravel beds near the Thames at Molesey; and (3) the Thames at Ditton (in cases of emergency).

The stations of the Company indicated upon the map are eight in number: A, Molesey (intake, reservoirs, pumping station); B, Ditton (reservoirs, filter beds, pumping station); C, Coombe (reservoir); D, Brixton-hill (reservoirs, pumping station—see Fig. 1); E, Streatham (reservoir—see Fig. 2); F, Norwood (reservoir); G, Selhurst (reservoir—see Fig. 3); and H, Rock-hill, Sydenham (reservoir—see Fig. 4).

Molesey.—The chief intake of the Company is from the Thames at West Molesey, on the south bank of the river. The area of the property here is rather over thirty-six acres, and the works consist of the intake, a pumping-station, an arrangement for obtaining water from the gravel beds, two reservoirs, and three cottages, one containing a small board-room.

Intake.—There are five inlets from the Thames, and they are placed close together. They are guarded by an outside grating composed of bars an inch in width, with spaces of one inch between each bar. A screen with smaller meshes is situated inside. There are grooves for two sets of screens, but only one set is used at a time. The inner screens are of galvanised iron, with $\frac{3}{8}$ in. meshes. The inlets allow the water to pass into a brick culvert, which passes under the towing-path to the engine-house well through a sluice house.

Pumping arrangements.—The river water is pumped up a height of about 14 ft. to the reservoir. This is done by a pair of centrifugal pumps, worked by two horizontal engines, and capable of raising 25,000,000 gallons of water daily. There are also two vertical engines of 50 horse power each, which are capable of pumping 17,625,600 gallons of water daily. These engines are used for pumping into the subsiding reservoirs and culvert and for pumping water from the gravel beds. When visited on Jan. 6th some of this machinery was being overhauled and repaired.

Water from the gravel beds.—A considerable quantity of water is obtained from the gravel beds situated on the property at Molesey. This water is collected by perforated pipes, which are laid in the ballast above the clay at a level of about 7 ft. below the summer water level of the Thames. Perforated earthenware pipes are arranged in a double line all along the northern side of the property near the towing-path, parallel with the river, and for some little distance near the eastern boundary of the property, at right-angles to the line just described. The pipes vary in size from 12 to 24 inches. There is a line of 12 in. pipes 771 ft in length, a line the same length of 18-in. pipes, a line of 200 ft. of 24-in. pipes, and a line 459 ft. in length of 18 in. pipes. The water collected by these pipes passes into a tank 12 ft. in depth and 5 ft. in diameter; from this tank it flows into an engine-house well, from which it is pumped into the reservoirs. The amount of water which can be obtained from the gravel beds is stated to be 6,000,000 or 7,000,000 gallons daily.

Reservoirs.—There are two reservoirs situated on the side of the engine house remote from the Thames. The reservoirs occupy an area of thirty acres and are capable of storing 128,000,000 gallons of water. The lower part of the sides of the reservoirs is concreted and the upper part is paved with bricks. For the supply of Ditton the upper part of the water is drawn off. The arrangement for conveying water to the filtration works at Ditton is that the iron pipes which take the water to the culvert from the reservoirs are fixed to floating buoys, thus ensuring that the "top water" only is drawn off. No water is filtered at Molesey—it all flows by gravitation to the station at Ditton.

The water is conveyed to Ditton by two separate channels; (1) an iron main 36 in. in diameter; and (2) a culvert. For the greater part of the distance the water passes in an oval brick culvert of which the dimensions are 5 ft. 9 in. by 4 ft. 9 in. In two places the brick conduit is replaced by a 54-in. iron pipe. The two places in which iron pipes are used are (1) near and under the rivers Mole and Ember for a distance of 800 yards; (2) through the village of Thames Ditton for a distance of 550 yards. The culvert is of older date than the 36-in. iron main.

Seething Wells, Ditton.—At Seething Wells the whole of the water-supply of the Company was formerly taken from the Thames. Water can, in cases of emergency, be taken at this point, as the old intake arrangements remain. The engineer of the Company states that it has not been necessary to use them for two years, and that they have not been used during that time. The station consists of two parts, divided by the Portsmouth-road. The older part, that next the river, contains four filter beds and a small reservoir. The total area of these filter beds is between three and four acres. On Jan. 6th it chanced that one of the filter beds was being re-made. As the construction of this filter differs from that of those usually made at the present time it may be worth while to describe it briefly. The bed of the filter is formed by thick, open-jointed slates supported on brick walls. The chamber below the slates is about 4 ft. in depth. Above the slates a layer of large gravel is placed, then a layer of shells, and then, at the top, the usual layer of fine sand. The newer part of the station is situated to the south of the Portsmouth-road, and consists of the pumping station, reservoir, and filter beds. There are eight filter beds, and these are placed 30 ft. higher than the four older ones next the river. More than half the water, therefore, has to be pumped up to them, and this is done by means of two compound beam engines of 100-horse power each.

Filter beds.—The eight newer filter beds have a total area of about nine acres. The filtered water is collected into tanks. Each filter has a separate tank of its own, so that the water from any filter bed can be examined separately. All these tanks are connected with one main.

Engines.—From Seething Wells the filtered water is pumped to Coombe and Brixton. The engines used for pumping to Brixton are four compound beam engines of 180-horse power each, three compound beam engines of 150-horse power each, one compound beam engine of 150-horse power (all of the Woolf type), and one Worthington triple expansion engine of 420 horse power. For the supply of Coombe reservoir a compound beam engine of the Woolf type, 150-horse power is used to work a double-acting solid plunger pump. Steam for working the engines is generated by Cornish and Lancashire boilers, which supply two steam mains. All the boilers of 100 lb. pressure can thus be connected through one main, and those of 50 lb. pressure through the other. The coal-supply is landed from the Thames at the old part of the station and goes in trucks through a tunnel under the Portsmouth-road to the coal stores in the new part of the station.

Coombe reservoir.—The reservoir at Coombe Warren is built on land belonging to the Duke of Cambridge, 180 ft. above ordnance datum. It is situated not very far from the shooting-range just off the high road from Portsmouth to London. The reservoir is built on brick arches and is capable of holding 1,150 000 gallons of water. At Coombe there is a stand-pipe 50 ft. in height and 220 ft. above ordnance datum. The water for the supply of Surbiton, Kingston, Esher, Ditton, and East and West Molesey comes from this reservoir.

Brixton hill.—This station is situated at Brixton-hill (see Fig. 1), just to the west of the thoroughfare of that name. The area of the works is about twelve acres, and the height above ordnance datum is 115 ft. The office of the Company, two reservoirs (Fig. 1, A A), a pumping station (Fig. 1, B), workshops (Fig. 1, C), and four cottages are situated here.

Reservoirs.—There are two reservoirs built on brick arches, and each is capable of holding 6,000,000 gallons of water.

The mains which bring the water from Ditton come up into the space between them.

Distribution of water.—From Brixton-hill the town district is supplied by gravitation, the water being distributed by four main trunks—24, 20, 18, and 12 in. in diameter respectively. For the supply of the country districts the water is pumped from Brixton to Streatham, Selhurst, Norwood, and Rock-hill reservoirs.

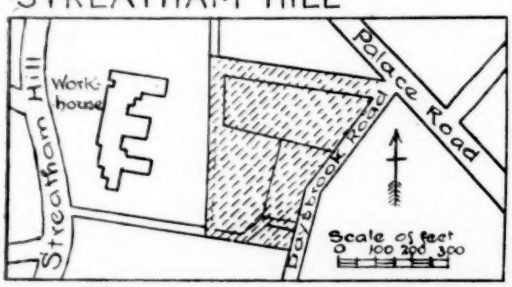
Engines.—There is a compound Worthington pump of 125-horse power which is used for pumping water to Streatham. This engine is worked by three Cornish boilers. A compound beam engine, 120-horse power, working two bucket and plunger pumps, is used for pumping to Rock-hill

FIG. 1.

reservoir, and works under 320 ft. head of water. Three compound beam engines of the Wolff type, each 60-horse power, work bucket and plunger pumps and are used for pumping water to Streatham and Selhurst. The steam is generated by eight Cornish boilers. A compound beam engine of 130-horse power, working a bucket and plunger pump, and another engine of 160-horse power pump water to Norwood. There is a 120-horse power compound beam engine of the Macnaught type working a bucket and plunger pump and another of 140-horse power of the same type. The former of these is used when occasion requires for pumping to Rock-hill, Norwood, Selhurst, and Streatham. The latter is used for pumping to Norwood, Selhurst, and Streatham. There is also a small compound beam engine of 30-horse power which can be used for pumping to Rock-hill.

Streatham-hill.—Streatham-hill station (see Fig. 2) has an area of four acres. It contains two covered reservoirs built

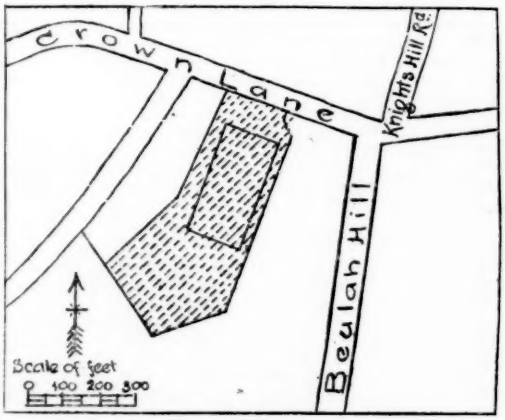
FIG. 2.



on brick arches. They are situated at the level of 198 ft. above ordnance datum. Each reservoir is capable of holding 3,750,000 gallons of water. The reservoirs are covered with earth and turfed at the top.

Norwood reservoir.—This station is situated in Crown-lane, Streatham. (See Fig. 3). The reservoir like all the others is built on brick arches and occupies an area of about one acre. It has a capacity of 5,000,000 gallons. The reservoir is

FIG. 3.



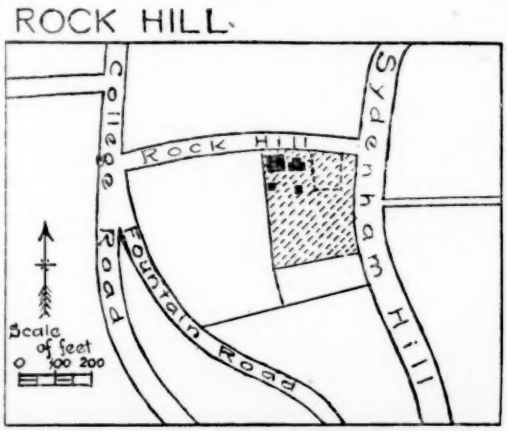
Norwood Reservoir.

covered with earth and turfed over. There is at this station sufficient area of spare ground to build another reservoir the same size. A caretaker's cottage is situated here.

Selhurst reservoir. — The Selhurst station is situated near Thornton Heath. The reservoir is 218 ft. above ordnance datum. It is built on brick arches and has a capacity of 2,500,000 gallons. The reservoir is covered by about 3 ft. of earth and turfed over. In the description of this station that was given to the last Royal Commission on the Metropolitan Water Supply it was said that there was a stand-pipe. Now, a stand-pipe is said to be "a curved vertical pipe arranged as a part of the main in waterworks to give the necessary head to supply elevated points," &c. There is no such "curved vertical pipe" at Selhurst, but there is an arrangement which acts as a stand-pipe. An 18-in. pipe is laid in the public road up the hill at a level of 42 ft. above that of the reservoir. When the water is pumped into this pipe an increased pressure is put on the district main. So the effect is the same as if there were a stand-pipe 42 ft. in height.

Rock-hill reservoir is on the brow of Sydenham-hill and is close to the Crystal Palace. (See Fig. 4.) The area here

FIG. 4.



occupied is one and a half acres. The reservoir is built of brick arches and is capable of holding 500,000 gallons of water, and is situated 372 ft. above ordnance datum. There is

also a high service tank 387 ft. above ordnance datum and capable of holding 115,000 gallons of water, and a stand-pipe 60 ft. in height. The top of the stand-pipe is 412 ft. above ordnance datum. During the day the water is pumped over the stand-pipe for high service and distributed in the neighbourhood. At night the water is pumped to fill the reservoir. The main is charged from the high-service tank.

Area of Supply.

The Act of 1848 authorises the Lambeth Waterworks Company to supply the places given in the following lists. Of these places some are entirely supplied, some partly supplied, some not supplied.

Supplied: Beckenham (the part of the parish lying on the western side of the River Ravensbourne), Esher, Kingston-upon-Thames, Long Ditton, Malden, Merton, Mitcham, Streatham, Thames Ditton, and Tooting Graveney.

Partly supplied: Battersea, Bermondsey, Camberwell, Christchurch, Clapham, Croydon, Lambeth, Lewisham (the part of the parish lying on the western side of the River Ravensbourne), Morden, St. Mary Newington, Newington Butts, Putney, St. George the Martyr, St. Saviour, Wandsworth, Wimbledon, and the Clink Liberty.

Not supplied: Horselydown, Rotherhithe, St. Olave, and St. Thomas.

The Act of 1871 authorises the supply of East Molesey and West Molesey, and these places are supplied by the Company.

The Lambeth Company supply about 150 houses in the parishes of Ham and Hook and about 200 houses in the parishes of Cheam, Chessington, Cuddington, and Ewell, which are outside the limits of the special Acts of 1848 and 1871.

Table of Statistical Details given by the Lambeth Waterworks Company for the Year 1896.

SUPPLY.	Average daily supply in gallons	2,855,836
	Percentage delivered for other than domestic purposes, exclusive of waste	25%
	Number of houses supplied	105,448
	Number of houses on constant supply	67,215
	Estimated population supplied	738,136
RESERVOIRS.	Number	5
Subsiding and storage unfiltered water	Area in acres	31
	Available capacity in gallons	123,000,000
Storage filtered water reservoirs	Number	8
	Capacity in gallons	28,765,000
ENGINES.	Number	28
	Horse power	3,665
	Greatest lift	380 feet.
	Head of pressure in the district supplied	Greatest, 380 feet; least, 30 feet.
WATER-PIPES.	Total number of miles of water-pipes	738, of which 544 are constantly charged.
	Number of miles of water-pipes in the metropolis	442, of which 386 are constantly charged.
	Number of miles of streets with water-pipes constantly charged in the metropolis	242½; many streets with two and three, and some with six, lines of pipes.
	Number of hydrants erected within the metropolis	3733 public hydrants, 471 hydrants for street watering, 182 private hydrants, and about 10,000 fire-plugs.
FILTERS.	Number of beds	12
	Area in acres	12½
	Depth of sand and other materials	7 feet.

THE King of Sweden has appointed Mr. P. Michelli, secretary of the Seamen's Hospital, Greenwich, to be a Knight (1st class) of the Order of the Wasa.

SANITATION AND THE PLAGUE PANIC AT MARSEILLES.

IF it were possible to establish a pillory where the names of the towns which have most sinned against the laws of public health might be exposed to public contumely, there can be little doubt that prominent among such offenders would stand the town of Marseilles. Blundering intrigue, deception, and ignorance seem to be the chief characteristics of the sanitary administration of that town. For instance, in 1884 there was a severe epidemic of cholera in the neighbouring town of Toulon. Marseilles was for taking all manner of measures against Toulon, but very great care was displayed to conceal the fact that the Toulon epidemic had in all probability come from Marseilles. While lengthy discussions were held as to the importation of cholera from the French colonies because there had been some cases on board a man-of-war which arrived at Toulon, the authorities at Marseilles carefully concealed the fact that there had been some months previously several deaths from cholera at one of their own hospitals. The sisters who had nursed the dying men were convoked and made to swear that they would keep the matter secret. Some years elapsed before the truth was generally known, and then, of course, this knowledge came too late to be of use. As for the filthy condition of Marseilles, this has been very fully described in these columns.[1] In a great number of houses there are overflow pipes from the cisterns which bring sewer air up to the surface of the drinking water supply. In many other houses there are no drains whatever. In 1893, during the cholera epidemic, there were some 14 000 houses at Marseilles that had no sanitary accommodation of any description and the inhabitants were obliged to throw out their night soil into the streets. The sea baths at Les Catalans were situated within a stone's throw of a large sewer outfall. Most of the other sewers fell into the old and tideless port, whence some 80,000 cubic metres of foul deposit are drenched out annually. The odour given off by the bubbles of gas that burst on the surface of the water in the port are extremely obnoxious; but it is not necessary to describe anew all these abominations. It was thought that Marseilles had recognised the error of its ways and had boldly entered upon an era of sanitary reform. In October, 1892, there was a slight epidemic of cholera, causing eighty-two deaths. The existence of this epidemic was officially recognised and all available measures were taken, apparently with success, to stamp out the disease. At the same time Marseilles won the honour of being the first town in France which obtained a special law, not only sanctioning a complete drainage scheme, but arming the authorities with extensive compulsory powers, so that the inhabitants should be forced to connect their houses with the new sewers and construct properly flushed and ventilated closets and drain pipes.[2] The scheme was exhibited by M. Cartier at the Universal Exhibition of 1889 and obtained the silver medal It formed the basis of a convention dated Aug. 21st, 1890, ratified by a vote of 29 out of 32 municipal councillors of Marseilles on the 4th of the following October. This scheme was sanctioned by a special law of Parliament, dated July 24th, 1891, and promulgated by the Presidential Decree of Aug. 27th, 1891.

The works were commenced on Oct. 8th, 1891. The sewers to be built were to measure in all 182,839 metres in length and the entire work was to be completed in five years—that is to say, on Oct. 8th, 1896. A penalty or fine of £20 for each day's delay was to be imposed if the contract was not executed at the appointed date; but hardly had the work begun then a systematic opposition was organised against its execution. As the law could not be altered attempts were made to create so many obstacles that the contractors themselves would be driven to demand the rescinding of their contract. As it was necessary to purchase land, notably for the installation of the pumping stations, it was easy to create delays by opposing legal quibbles to the compulsory expropriation of premises, &c. By taking special measures the contractors hoped to terminate the works in three instead of five years, which would have

[1] See THE LANCET, April 1st, 8th, 29th, and May 6th, 1893.

[2] For a full description of this scheme of drainage and map see THE LANCET, May 6th, 1893.

been a great benefit to the town and have placed it to-day in a position to defy the invasion of the plague. But these good intentions were defeated by the stubborn opposition of the adversaries of the scheme. In the interval a new municipality had been elected, and the majority of its members was antagonistic to the scheme of drainage in course of execution. Nevertheless, in April, 1896, 80,680 metres of large sewers and 96,900 of small pipe sewers were laid; there only remained 8800 metres to finish the contract. Of 933 automatic flush tanks 880 were in their places, and 2140 manholes out of a total of 2175 were completed. Out of 30,000 metres of old sewers which had to be repaired and adapted to the new system 27,900 metres had been so treated. Pumping stations with a force of 480 horse power were in working order. But while the construction of the sewers was thus pushed forward the town was morally and materially pledged to increase its water-supply so that the sewers and the house drains should be properly flushed. Nothing of the sort has been done.

The sewers are built and are ready, but the town is not ready. The municipality even refuses to accept the sewers and will not allow the houses to be connected with them. There is a fierce conflict between the local authorities and the Prefecture, which represents the Central Government. The latter is seeking to compel the municipality to execute its side of the contract. The law says that houses must connect within two years of the completion of the sewers. This connexion will cost from £40 to £50 per house, and more for large houses where several closets are required. We foretold when describing this scheme that as soon as the people of Marseilles understood better what this contract meant they would rebel against it. Fortunately the matter is in the hands of the Government, and not of the municipality. As we said when criticising the scheme four years ago: "No municipality could drain the town of Marseilles. The population is far too ignorant, and any municipality that attempted to put syphon-traps, flush-tanks, and, in fact, proper closets into the houses would be very soon turned out of office. Yet all this will now have to be done; but it is the Prefect, it is the Central Government of France, that will have to enforce the due execution of the contract signed. The Prefect is quite independent of the Marseilles elector, and as for the municipality which signed the contract it has long ago ceased to exist. The Marseilles population will be appalled when they see what sanitation means and what it costs, for we must remember that the majority of houses have no waterclosets at all, and that there is hardly such a thing in the whole town as a proper watercloset. Probably 90 per cent. of the population of Marseilles have never even seen a sanitary closet with a two-gallon flush, trap, ventilated four-inch soil pipe, &c., yet these things are to be provided in all the houses, and this in the brief space of two years after the completion of the sewers." These words, published in THE LANCET of May 6th, 1893, are now fully borne out by the attitude of the population and municipality of Marseilles. Doubtless, the Government will, in the long run, overcome this local resistance; but in the meanwhile precious time is being lost, and by maintaining Marseilles in its filthy condition thousands of lives are wilfully and uselessly sacrificed. The death-rate of Marseilles for an average of twenty years was estimated by Dr. Proust, in 1889, at 32 per 1000. In the Hotel de Ville district it was equal to 47·4 per 1000. With proper sanitation this death-rate could, to judge by what has been done in many other towns, be reduced by one-third. One out of every three deaths that occur in Marseilles might be prevented. The greater part of the new sewers of Marseilles, if, instead of opposition, every facility had been afforded, could have been built two years ago. By this time most of the houses might have drained into these sewers; many thousands of lives would thus have been saved, and there would remain no excuse, no justification whatsoever, for the present ridiculous panic which the fear of the plague has occasioned. But in 1893 the reaction against sanitary reform was master of the situation.

In February of that year another cholera epidemic broke out. There were 102 deaths, but this epidemic was not officially recognised. Disinfection cannot be enforced unless an epidemic is officially declared. Consequently, several persons refused to have their premises disinfected. Under such circumstances it is not surprising that the epidemic broke out again in May and continued till the autumn, causing, as was stated at the time at the Ministry of the Interior, 767 deaths, making a total of 869 deaths from cholera during 1893. The local authorities officially acknowledged the existence of cholera in 1892, when there were 82 deaths; they officially denied the existence of cholera in 1893, when there were 869 deaths from this same disease. Thus Marseilles totally disregarded the Dresden International Sanitary Convention to which the French Government had subscribed; though in 1892, under circumstances far less serious, they had observed its stipulations. Of course, this inconsistent policy was due to the fear that by again officially recognising the existence of cholera at Marseilles the shipping interests of that port would be affected. But what shall we think of the present attitude of the local authorities? Cholera is far more dangerous to Western Europe than plague. Recent experience has proved that we are not yet free from the danger of cholera; but though ships and travellers have come from plague-infected countries over and over again they have not imported plague in this part of the world. For weeks ships had arrived at Marseilles from Bombay, where plague existed in a virulent form, and no one took the slightest notice nor was any mischief done. But one day the papers announced that a small boat which was making its way up the Seine to Paris with some carpets from Bombay on board had been stopped. Thereupon an indescribable and inexplicable panic set in at Marseilles. That town, which had been so anxious that nothing should be done likely to interfere with its commercial relations, suddenly declared itself in favour of applying quarantines in the strictest possible manner. The measures taken exceeded considerably what the law sanctioned, but the authorities at Marseilles declared that if merchandise from India was landed there would be riots and bloodshed. So great was the determination shown that the Government had to yield and strict quarantines were imposed. The population which had failed to take proper precautions against the real danger of cholera enforced illegal and exaggerated precautions against the very problematical danger of plague. The memory of the terrible plague epidemic which devastated Marseilles in 1720 has not been obliterated and accounts for the actual panic. This terror has caused the present inconsistent action. In 1893 Marseilles acted illegally to prevent interference with its commercial interests, and to-day Marseilles has again acted illegally, with the result that it has completely wrecked those self-same commercial interests. The Central Government, on its side, by tolerating this illegal action so as to prevent bloodshed, has produced a state of affairs which may well provoke the bloodshed it seeks to avoid.

The imposition of quarantines has thrown the dock labourers out of employment. Further, the oil and soap mills are at a standstill. Marseilles is renowned for its soap, which is supposed to be made with the oil from the olives of the neighbourhood; but what will become of French olive oil without Indian linseed? The demand for the renowned olive oil of Provence is far and away in excess of the supply. The deficiency is made up by adulteration with linseed and cottonseed oil; and now that the importation of linseed from India is checked the oil and soap factories are discharging their workpeople. The town of Marseilles, having broken the French law and brought about this calamity, thereupon coolly applies to the French Government to send subsidies out of the public treasury to relieve the distress caused by its own illegal action. On Feb. 17th last there were threatening demonstrations of the unemployed in the streets of Marseilles. The police had to turn out in force and some rioting ensued. The Prefect had to appeal to the employers and beg them to reinstate some of the men they had discharged. The mayor, on his side, opened relief works at the Cemetery of St. Charles, which is to be cleared. In the Catalan district a yard was opened where men were set to work at sawing wood, and many other efforts were made to relieve the distress of the unemployed. Nevertheless, the penury is so widespread that several deaths from starvation have been recorded. Such are the blessings of quarantine! On the other hand, has the danger of importing plague, if such danger exists, been avoided? Hardly had the quarantine been imposed than it was discovered that there was no proper means of disinfecting the suspected ships. Dr. Chantemesse, of the Pasteur Institute, was dispatched in hot haste to the quarantine station of Frioul, an island outside the port of Marseilles. He was accompanied by members of the Special Commission recently appointed by the Sanitary Council of Marseilles. These gentlemen discussed how a chamber could be installed for the fumigation of such merchandise, &c., as could not

be placed within the disinfecting stoves and exposed to the action of steam under pressure. M. Guérard, engineer in chief of the *Ponts et Chaussées*, was instructed to draw up an estimate within the twenty-four hours. He reported that such an installation would cost £6000. Thereupon another conflict arose as to who should pay this sum. It was argued that as, even in normal times, the State receives £16,000 a year from the ships detained at Frioul, it was the Government and not the municipality that should pay.

While these matters are under discussion and the commerce of Marseilles is being very seriously injured it is evident that the quarantine has been broken through over and over again. If the plague can be imported by passengers and merchandise, any number of passengers and merchandise coming from Bombay were landed at Marseilles after the plague had begun and before the quarantine was imposed. Then during the two previous years plague might in a like manner have been imported from China, notably from Hong-Kong, for no one ever thought of taking any precautions. Now, again, that the quarantine has been imposed at Marseilles, what happens? Passengers to avoid this inconvenience change ships at Alexandria. There is no quarantine against Egypt, therefore passengers from Bombay by merely changing ships on their way homewards can land at Marseilles without let or hindrance. Others have landed at Brindisi and entered France *viâ* Modena. Indeed, it has been proved over and over again that, in face of modern facilities of communication, it is absolutely impossible to organise an effective quarantine. Sanitary improvements constitute the really effective check to the spread of epidemics. Such improvements have been attempted in Marseilles, but we have seen what obstacles are placed in the way of their realisation.

THE INTERNATIONAL SANITARY CONFERENCE.

FROM Venice under date March 6th our Special Correspondent writes:—

Its preparatory business concluded, the Conference nominated two sub-committees to formulate measures of defence against the invasion and spread of the pestis bubonica, one committee acting for Europe, the other for the non-European countries.

The European sub-committee proposed, with the approval of the Conference, that the countries in which a single case of the "pestis" had been certified should notify the same to the others, either through diplomatic or consular agencies, or, failing these, directly by telegraph. Thereafter detailed reports on the origin, course, and issue of the disease should be dispatched to the same countries at least once a week, the reports indicating specially the measures adopted to restrict as much as possible the spread of the "pestis."

For "infected arrivals by rail" or otherwise by land the sub-committee, again with the approval of the Conference, proposed to make disinfection severely obligatory. Land quarantine and sanitary cordons are to be suppressed, the delegates being unanimous in discrediting such measures and in replacing them by disinfection as practised by modern science. Each country, however, may reserve the right of barring its own frontiers, only, however, against *bonâ fide* cases or others warrantably suspected as such. When medical visits are established on a frontier these must, to save time, synchronise with the custom-house examinations. Passenger trains, with luggage or postal mails, shall not be detained at the frontier; but if a carriage be found to contain a real or suspected case of "pestis" it shall be unhooked from the train at the frontier or the nearest station, so as to be disinfected and shall join the train following, while the original train proceeds on its course.

Travellers coming from infected countries shall be subjected to a surveillance of eight days. Individual Governments may reserve the right of taking special measures of precaution against gipsies, vagrants, emigrants, or such persons as cross the frontier in companies.

For the disinfection of ships the following regulation was approved:—Patients suffering from the "pestis" to be immediately landed and isolated; the rest of those on shipboard to be subjected to surveillance not exceeding ten days, counting from the development of the last case; passengers' personal effects, luggage generally, and goods or cargo to be disinfected; the bilge water shall be removed before the general disinfection of the ship.

Suspected ships shall be subjected to a simple medical visit, but the passengers' personal effects and those of the crew will have in every case to be disinfected.

Special measures will be taken by each Government for the ships conveying emigrants or found to be in bad hygienic condition.

Ships declining to undergo such measures will have to land their passengers and goods. The former as well as the latter will have to undergo the regulation measures, after which the ships may resume their voyage.

Such are the prescriptions for European arrivals. Those for extra-European arrivals have next to be enumerated. Meanwhile the importance of both groups of measures lies in this, that after their adoption the diplomatic section of the Conference will digest them in a species of international code which will without question be accepted by all the States represented at the Conference, including those—viz., Turkey, Great Britain, and Sweden and Norway—which hitherto have not adhered to the Paris Convention. These Powers, in fact, have, through their delegates, given official adhesion to the aforesaid Convention at the Conference now sitting.

The measures of non-European application for the prevention of the "pestis" are the following. At the ports of departure there will be made an obligatory hygienic visit to every individual at the moment of embarkation, followed by a rigorous compulsory disinfection of all articles, whether infected or suspected. No one betraying symptoms of the "pestis" will be allowed to embark, and as for pilgrims, they will have to show that they have the means necessary for the voyage to the holy places, for their sojourn thereat, and for their return therefrom.

For the passage of ships through the Suez Canal, those ships which are "recognised" shall have free and immediate passage from the port of departure, but will not be able to pass at Suez unless they have for ten days at least been *en route* from the last port considered to be infected.

Those non-recognised or suspected, if they are provided with a physician and disinfecting apparatus, will be able to pass the canal in quarantine; others not so provided will have to proceed to the Sources of Mosé for disinfection and for sanitary overhauling. This regulation holds, also, in the case of postal or passenger vessels which have made a voyage of at least fourteen days.

Those, on the other hand, the voyages of which have been of less duration and which have passengers direct for Egypt, will disembark the same at the Sources of Mosé. They will be isolated for twenty-four hours, their effects will be disinfected, and then they will have free course like the vessels themselves.

The infected vessels will be detained at the Sources of Mosé. Patients suffering from the "pestis" will be disembarked and isolated in hospital; the other passengers also disembarked and isolated under surveillance for a period not exceeding ten days; all effects, goods, and the ship itself shall be disinfected. Greater consideration will be shown to passengers on ships having on board a physician and disinfecting apparatus.

The Conference proceeded to regulate in every detail the surveillance and disinfecting service at Suez and the Sources of Mosé. The visit will be by day. The medical service is entrusted to seven duly qualified officers—to wit, a physician-in-chief, with a salary of from 12,000 to 15,000 fr.; four subordinates, with salaries from 8000 to 12,000 fr.; and two auxiliaries, with a minimum salary of 6000 fr.

Similarly regulated was the passage of the Suez Canal in quarantine. When such passage is admitted notice thereof is telegraphed to the country interested, warning being given, under penalties, to those vessels which did not go to the port indicated by the port commandant, except in cases of *force majeure*.

Specially stringent measures are applied to pilgrim vessels so as to ensure their being in the best sanitary condition possible and to obviate in every way the risk of their diffusing the "pestis." The regulations are directed to the stage before departure and to that during the voyage in case of illness or death among the pilgrims, severe fines being imposed on the captains failing scrupulously to observe the regulations in question.

Regulations are also laid down for the hygienic surveillance applicable to pilgrim vessels in the sanitary station

of Caraman, the improvements to be introduced into it, and those to be inaugurated at other Red Sea stations.

As well for European as for non-European arrivals the trade in personal effects, carpets, rags, skins, and such goods as may easily convey the "pestis" is strictly forbidden.

By such legislation as the above loyally enforced the Conference expresses the hope that all risk of invasion from the "pestis," or the diffusion of the same in non-infected countries, will be obviated.

BUBONIC PLAGUE IN INDIA.

WHILE the progress of the plague shows signs of abatement in Bombay city, it cannot be said that it has undergone much change for the better in some other places. Still, it is confidently believed that the disease is beginning to die out; it spreads very slowly and remains localised in the Bombay Presidency and Lower Sind, and shows no sign of extending as an epidemic over India generally. It seems to us that there is a good deal of point and pertinence in the remarks of the *Saturday Review* of the 6th inst. in regard to the anxiety that is being shown on the continent of Europe to keep out plague by quarantining ships, disinfecting baggage, and fumigating cargo that comes from the East. Hong-Kong may, says our contemporary, be taken, for purposes of illustration, as a centre of infection in 1894. It is in communication by steam and otherwise with a large number of other ports on the east coast of China and with Formosa and Japan, with the Philippines, Borneo, Java, Saigon and the Straits, as well as with India and Ceylon. The disease already existed at Canton, whence it probably came to Hong-Kong. Two years later it broke out suddenly at Bombay, although there is very little merchandise made or prepared for shipment in Hong Kong that would be likely to go to Bombay. Is not the disease, asks the *Saturday Review*, more probably carried on the persons of those infected than on merchandise as a vehicle, and then when such infected persons reach a place reeking with filth it finds a suitable habitat and flourishes vigorously? Be this as it may, there is no doubt in our minds that local conditions are a most important factor, that filth is the great fertiliser and the ground the vitaliser of the plague bacillus. Calcutta, we are glad to say, remains absolutely free from the disease. Very elaborate and stringent arrangements have been made all over India under the Epidemic Diseases Act to prevent the malady from spreading.

Lord Sandhurst (the Governor) has issued a notification appointing a special committee of four members—General Gatacre, Mr Snow (commissioner), Surgeon-Major Dimmock, and Mr. James (municipal engineer)—to carry out, under the orders of the Government, stringent measures to suppress and prevent the spread of the plague in Bombay. These measures, the Governor states, should comprise organisation—first, for the discovery of all cases; secondly, for the treatment of all cases in the hospitals; and thirdly, for the gradual segregation, so far as possible, of those persons who have been living in the same room with the plague-stricken or have been in close attendance upon them. The committee are given the fullest powers to enforce the measures.

Dr. Yersin has arrived in Bombay from Saigon bringing a quantity of anti-plague serum with him. Professor Koch is expected to proceed to India as soon as he has completed his work at the Cape in regard to the rinderpest; and in the meantime M. Haffkine and Professor Hankin are actively prosecuting their researches, the former in the experimental preparation and application of a prophylactic antitoxin serum.

The Secretary of State for India has received an official telegram from the Governor of Bombay in continuation of the previous telegram of March 1st. "For the week ending March 5th the deaths from all causes in Bombay city were 1870, reported plague deaths, 635. For the week ended March 4th: 397 dwellings condemned, 115 recommended for alterations, tiles removed from 931, floors dug up in 560, and 1727 limewashed, 210 vacated, and 46 have been destroyed by fire. Notification issued under Epidemic Diseases Act places carrying out of measures to suppress and prevent spread of plague in Bombay city in the hands of executive committee of four, who are rapidly organising improved and extended staff for house-to-house visitation and general health department; also organising large extension of hospitals with segregation camps attached for occupants of infected rooms and houses, and measures for removal thereto of sick and probably infected.

"In Poona plague still very prevalent, and no sign of diminution. For Poona municipal and cantonment areas executive committee arranged, who are organising complete scheme for house-to-house visitation, hospital, and segregation camps, and removal thereto of sick and probably infected.

"In worst affected places in Thana district—namely, Bandra, Coorla, and Bhiwandi—active measures under European supervision have been in force for more than a week. In Bandra the number of cases has decreased; in Coorla and Bhiwandi increased. Plague has newly appeared in five more villages in Thana district, but total number of reported cases in the district very slightly exceeds those of previous weeks.

"In Surat district the number of cases and of places affected both increased; elsewhere in the Presidency proper the only local cases for week ended March 5th were: In Satara district, 13 cases, 11 deaths; in Ratnagiri district, 3 cases, 2 deaths; in Kolaba district, 25 cases, 20 deaths; in Kathiawar district, 2 cases, 1 death; in Baroda district, 16 cases, 13 deaths. Railway inspection in force at Ahmedabad, Bhusawal, Dhond, Hotji, Londa, as well as Kalyan and Palghar.

"Karachi plague deaths for week, 200. Local cases have occurred at Sukkur; elsewhere in Sind no further indications of spread. In Karachi more patients are being taken to hospitals."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6412 births and 3822 deaths were registered during the week ending March 6th. The annual rate of mortality in these towns, which had been 18·8 and 19·4 per 1000 in the two preceding weeks, declined again last week to 18·1. In London the rate was 17·4 per 1000, while it averaged 18·6 in the thirty-two provincial towns. The lowest rates in these towns were 12·6 in Derby, 12·9 in Croydon, 13·6 in Birkenhead, and 13·9 in Huddersfield; the highest rates were 20·1 in Birmingham, 21·4 in Plymouth, 22·7 in Salford, and 23·0 in Manchester. The 3822 deaths included 331 which were referred to the principal zymotic diseases, against 316 and 379 in the two preceding weeks; of these, 103 resulted from whooping-cough, 67 from diphtheria, 59 from measles, 45 from diarrhœa, 26 from "fever" (principally enteric), 20 from scarlet fever, and 6 from small-pox. The lowest death-rates from these diseases were recorded in Croydon, Sunderland, Norwich, and Newcastle-upon-Tyne; while they caused the highest rates in Blackburn, Bolton, Salford, and Plymouth. The greatest mortality from measles occurred in Salford, Bolton, and Plymouth; and from whooping-cough in Birmingham, Bristol, Plymouth, Swansea, Blackburn, and Burnley. The mortality from scarlet fever and from "fever" showed no marked excess in any of the large towns. The 67 deaths from diphtheria included 43 in London, 4 in West Ham, and 3 in Birmingham. Six fatal cases of small-pox were registered in London, but not one in any other of the thirty-three large towns. There were 43 cases of small-pox under treatment in the Metropolitan Asylum Hospitals and in the Highgate Small-pox Hospital on Saturday last, the 6th inst., against 38, 34, and 43 at the end of the three preceding weeks; 6 new cases were admitted during the week, against 20, 3, and 18 in the three preceding weeks. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital at the end of the week was 2746, against 3050, 2901, and 2817 on the three preceding Saturdays; 211 new cases were admitted during the week, against 226, 227, and 237 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 335 and 368 in the two preceding weeks, declined again to 307 last week, and were 273 below the corrected average. The causes of 57, or 1·5 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were

duly certified in West Ham, Portsmouth, Bristol, Manchester, Salford, and in eleven other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Halifax, Sheffield, and Hull.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had declined in the three preceding weeks from 28·8 to 25·3 per 1000, further fell to 24·9 during the week ending March 6th, but exceeded by 6·8 per 1000 the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 18·0 in Leith and 18·8 in Aberdeen, to 27·2 in Glasgow and 32·4 in Perth. The 743 deaths in these towns included 36 which were referred to whooping-cough, 30 to measles, 16 to diarrhœa, 5 to "fever," 5 to scarlet fever, and 4 to diphtheria. In all, 96 deaths resulted from these principal zymotic diseases, against 119 and 86 in the two preceding weeks. These 96 deaths were equal to an annual rate of 3·2 per 1000, which was 1·6 above the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of whooping-cough, which had been 45 and 32 in the two preceding weeks, rose again to 36 last week, and included 24 in Glasgow and 7 in Edinburgh. The deaths referred to measles, which had been 42 and 30 in the two preceding weeks, were again 30 last week, of which 18 occurred in Glasgow, and 10 in Edinburgh. The 5 fatal cases of scarlet fever corresponded with the number recorded in the preceding week, and included 2 in Glasgow. The 5 deaths referred to different forms of "fever" exceeded the number in any recent week, and included 3 in Glasgow, where 3 of the 4 fatal cases of diphtheria were also recorded. The deaths from diseases of the respiratory organs in these towns, which had been 218 and 231 in the two preceding weeks, declined again last week to 203, but exceeded by 92 the number in the corresponding period of last year. The causes of 47, or more than 6 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 43·4 and 37·6 per 1000 in the two preceding weeks, rose again to 45·2 during the week ending March 6th. During the past nine weeks of the current quarter the death-rate in the city has averaged 40·9 per 1000, the rate during the same period being 18·7 in London and 22·7 in Edinburgh. The 303 deaths registered in Dublin during the week under notice showed an increase of 51 upon the number in the preceding week, and included 79 which were referred to the principal zymotic diseases, against 72 and 55 in the two preceding weeks; of these, 44 resulted from measles, 21 from whooping-cough, 7 from "fever," 4 from scarlet fever, and 3 from diarrhœa. These 79 deaths were equal to an annual rate of 11·8 per 1000, the zymotic death-rate during the same period being 1·6 in London and 3·6 in Edinburgh. The fatal cases of measles, which had been 43 and 34 in the two preceding weeks, rose again to 44 last week. The deaths from whooping-cough, which had declined in the three preceding weeks from 25 to 12, rose again to 21 last week. The 7 deaths referred to different forms of "fever" exceeded the number in any week during the current year; and the mortality from scarlet fever also exceeded that recorded in the preceding week. The 303 deaths in Dublin last week included 50 of infants under one year of age, and 49 of persons aged upwards of sixty years; the deaths of infants showed a slight increase, while those of elderly persons were slightly below those recorded in the preceding week. Fourteen inquest cases and 5 deaths from violence were registered; and 70, or nearly a fourth, of the deaths occurred in public institutions. The causes of 22, or more than 7 per cent., of the deaths in the city last week were not certified.

VITAL STATISTICS OF LONDON DURING FEBRUARY, 1897.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality during February in each of the forty-three sanitary areas of London. With regard to the notified cases of infectious disease in the metropolis during last month, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to 8·7 per 1000 of the population, estimated at 4,463,169 persons in the middle of this year. In the three preceding months the rates had been 12·6, 10·7, and 9·0 per 1000 respectively. Among the various sanitary areas the rates were considerably below the average in Kensington, St. George Hanover-square, St. James Westminster, Marylebone, Hampstead, St. Martin-in-the-Fields, and City of London; while they showed the largest excess in St. Giles, Bethnal Green, Poplar, Battersea, Camberwell, Greenwich, and Lee. Forty-eight cases of small-pox were notified in London during February, against 3 and 8 in the two preceding months; of these, 29 belonged to Camberwell, 6 to Strand, 5 to the Port of London, 2 to Stoke Newington, and 2 to Lambeth sanitary areas. There were 43 cases of small-pox under treatment in the Metropolitan Asylum Hospitals at the end of February, against 1, 3, and 8 at the end of the three preceding months; 53 new cases were admitted during the month, against 7 in January. The prevalence of scarlet fever showed a further decline from that recorded in recent months; this disease was proportionally most prevalent in Hackney, St. Giles, St. Olave Southwark, Battersea, Wandsworth, Greenwich, and Lee sanitary areas. The Metropolitan Asylum Hospitals contained 2775 scarlet fever patients at the end of February, against 3932, 3601, and 3246 at the end of the three preceding months; the weekly admissions averaged 228, against 356, 355, and 245 in the three preceding months. The prevalence of diphtheria in London differed but slightly from that recorded in the preceding month; among the various sanitary areas this disease showed the highest proportional prevalence in St. George-in-the-East, Mile End Old Town, Poplar, Camberwell, Greenwich, Lewisham, and Woolwich. There were 855 diphtheria patients under treatment in the Metropolitan Asylum Hospitals at the end of February, against 777, 829, and 897 at the end of the three preceding months; the weekly admissions averaged 101, against 110, 119, and 105 in the three preceding months. The prevalence of enteric fever in London showed a slight further decline from that recorded in recent months; this disease was proportionally most prevalent in Chelsea, Stoke Newington, St. Luke, and Bermondsey sanitary areas. Erysipelas showed the highest proportional prevalence in St. Pancras, St. Luke, Shoreditch, Bethnal Green, Poplar, and Lee sanitary areas. The twenty-six cases of puerperal fever notified during February included 7 in Lambeth and 5 in Islington sanitary areas.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various sanitary areas, the deaths occurring in the institutions of London having been distributed among the various sanitary areas in which the patients had previously resided. During the four weeks ending Saturday, Feb. 27th, the deaths of 6344 persons belonging to London were registered, equal to an annual rate of 18·5 per 1000, against 19·2, 17·6, and 18·2 in the three preceding months. The lowest death-rates during February in the various sanitary areas were 12·8 in Hampstead, 13·4 in Stoke Newington, 14·1 in Plumstead, 14·4 in Paddington, 15·1 in Lewisham, 15·2 in Chelsea, and 15·3 in St. George Hanover-square; the highest rates were 24·2 in Clerkenwell, 24·3 in Limehouse, 24·6 in City of London, 24·8 in St. George Southwark, 25·0 in St. Olave Southwark, 26·2 in St. Saviour Southwark, and 27·2 in St. George-in-the-East. During the four weeks of February 556 deaths were referred to the principal zymotic diseases in London; of these, 181 resulted from diphtheria, 175 from whooping-cough, 58 from diarrhœa, 52 from scarlet fever, 44 from measles, 40 from enteric fever, 4 from small-pox, and 2 from ill-defined forms of continued fever. These 556 deaths were equal to an annual rate of 1·6 per 1000; no death from any of these diseases was recorded during the month under notice in St. Martin-in-the-Fields; among the other sanitary areas they caused the lowest death-rates in St. George Hanover-square, Westminster, Hampstead, St. Saviour Southwark, and St. George Southwark; and the highest rates in St. George-in-the-East, Limehouse, Camberwell, Greenwich, and Woolwich. Four fatal cases of small-pox were registered in London during February, of which 2 belonged to Camberwell, 1 to Greenwich, and 1 to St. Pancras sanitary areas. The 44 deaths referred to measles were less than a third of the corrected average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in Clerkenwell, Bethnal Green, Limehouse, and

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON—FEBRUARY, 1897.

(Specially compiled for THE LANCET.)

SANITARY AREAS.	Estimated population in the middle of 1897.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of Infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.†	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,463,169	48	1289	967	1	198	1	26	447	—	2977	8·7	4	44	52	181	175	—	40	2	58	556	1·6	6344	18·5	126
West Districts.																										
Paddington	126,161	—	35	21	—	1	—	1	18	—	76	7·9	—	—	—	3	4	—	—	—	2	9	0·9	139	14·4	102
Kensington	171,427	—	29	16	—	3	1	—	21	—	70	5·3	—	—	2	3	4	—	1	—	1	11	0·8	211	16·0	139
Hammersmith	105,959	—	27	11	—	5	—	1	6	—	50	6·2	—	—	1	3	2	—	—	—	1	7	0·9	156	19·1	163
Fulham	120,040	—	28	19	—	1	—	—	8	—	56	6·1	—	—	3	2	4	—	—	—	1	10	1·1	149	16·2	114
Chelsea	96,692	—	27	26	—	9	—	—	9	—	71	9·6	—	1	1	3	3	—	2	—	2	12	1·6	113	15·2	117
St. George Hanover-square	80,330	—	12	2	—	—	—	1	2	—	17	2·8	—	1	—	1	—	—	—	—	—	2	0·3	94	15·3	120
Westminster	53,027	—	8	6	—	3	—	—	7	—	24	5·9	—	—	1	—	1	—	—	—	1	3	0·7	76	18·7	149
St. James Westminster	22,576	—	4	2	—	1	—	—	—	—	7	4·0	—	—	—	—	3	—	—	—	1	4	2·3	44	25·4	273
North Districts.																										
Marylebone	140,808	—	17	15	—	3	—	—	12	—	47	4·4	—	—	—	3	4	—	—	—	3	10	0·9	218	20·2	116
Hampstead	77,275	—	15	11	—	4	—	—	4	—	34	5·7	—	—	—	—	2	—	—	—	1	3	0·5	76	12·8	67
St. Pancras	242,255	1	49	35	—	10	—	1	41	—	137	7·4	1	3	3	7	7	—	3	—	3	27	1·5	336	18·1	96
Islington	341,134	—	91	54	—	19	—	5	27	—	196	7·5	—	3	4	14	13	—	4	—	1	39	1·5	454	17·4	104
Stoke Newington	34,136	2	7	2	—	4	—	1	2	—	18	6·9	—	—	—	1	1	—	—	—	—	2	0·8	35	13·4	93
Hackney	216,688	—	87	42	—	5	—	1	20	—	155	9·3	—	1	4	9	4	—	1	—	—	19	1·1	259	15·6	117
Central Districts.																										
St. Giles	37,840	1	17	3	—	3	—	1	6	—	31	10·7	—	—	1	1	2	—	—	—	—	4	1·4	66	22·7	197
St. Martin-in-the-Fields	12,711	—	1	1	—	1	—	—	1	—	4	4·1	—	—	—	—	—	—	—	—	—	—	—	17	17·4	—
Strand	23,552	6	3	3	—	1	—	—	1	—	14	7·7	—	—	—	—	2	—	—	—	1	3	1·7	41	22·7	80
Holborn	30,493	—	7	4	—	1	—	—	3	—	15	6·4	—	1	—	—	1	—	—	—	1	3	1·3	55	23·5	105
Clerkenwell	66,162	—	11	17	—	5	—	—	2	—	35	6·9	—	3	—	3	2	—	3	—	—	11	2·2	123	24·2	165
St. Luke	41,279	—	8	5	—	7	—	—	10	—	30	9·5	—	—	1	1	2	—	—	—	—	4	1·3	75	23·7	146
City of London	30,228	—	3	4	—	2	—	—	1	—	10	4·3	—	1	—	1	1	—	2	—	—	5	2·2	57	24·6	154
East Districts.																										
Shoreditch	121,883	—	33	37	—	3	—	—	23	—	96	10·3	—	1	2	11	2	—	2	—	1	19	2·0	195	20·9	107
Bethnal Green	129,096	—	36	37	—	7	—	—	26	—	106	10·7	—	7	2	8	1	—	2	1	2	23	2·3	189	19·1	115
Whitechapel	79,724	—	23	23	1	4	—	—	11	—	62	10·1	—	—	2	2	1	—	—	—	—	5	0·8	121	19·8	117
St. George-in-the-East	47,917	—	9	15	—	2	—	—	7	—	33	9·0	—	2	1	3	3	—	1	—	—	10	2·7	100	27·2	114
Limehouse	58,508	—	16	12	—	2	—	—	8	—	38	8·5	—	3	—	2	4	—	1	—	1	11	2·5	109	24·3	165
Mile End Old Town	111,883	—	28	42	—	1	—	1	6	—	78	9·1	—	4	1	8	5	—	1	—	1	20	2·3	152	17·7	94
Poplar	169,811	1	48	55	—	10	—	1	32	—	147	11·3	—	7	4	8	5	—	—	—	1	25	1·9	280	21·5	141
South Districts.																										
St. Saviour Southwark	24,919	—	3	7	—	1	—	—	4	—	15	7·8	—	—	—	—	—	—	—	—	1	1	0·5	50	26·2	152
St. George Southwark	60,388	—	18	4	—	4	—	—	6	—	32	6·9	—	—	—	1	1	—	—	—	—	2	0·4	115	24·8	167
Newington	122,191	—	43	23	—	4	—	1	13	—	84	9·0	—	1	—	3	14	—	1	—	3	22	2·3	214	22·8	144
St. Olave Southwark	11,480	—	5	2	—	—	—	1	—	—	8	9·1	—	—	—	—	—	—	—	—	1	1	1·1	22	25·0	189
Bermondsey	85,629	1	20	22	—	8	—	—	7	—	58	8·8	—	—	1	3	4	—	1	—	2	11	1·7	144	21·9	151
Rotherhithe	40,643	—	6	9	—	2	—	—	4	—	21	6·7	—	1	—	2	1	—	—	—	1	5	1·6	63	20·2	187
Lambeth	300,048	2	97	66	—	17	—	7	23	—	212	9·2	—	2	4	12	16	—	4	—	7	45	2·0	463	20·1	160
Battersea	168,877	—	93	31	—	6	—	—	14	—	144	11·1	—	—	3	7	7	—	2	—	1	20	1·5	199	15·4	118
Wandsworth	195,612	—	77	41	—	11	—	1	12	—	142	9·5	—	1	6	8	6	—	3	1	3	28	1·9	244	16·3	125
Camberwell	257,575	29	84	129	—	9	—	—	25	—	276	14·0	2	1	4	21	19	—	1	—	6	54	2·7	348	17·6	129
Greenwich	178,367	—	83	56	—	12	—	1	14	—	165	12·1	1	—	1	10	14	—	4	—	3	33	2·4	254	18·6	136
Lewisham (excluding Penge)	86,152	—	28	27	—	5	—	1	2	—	63	9·5	—	—	—	7	4	—	—	—	3	14	2·1	100	15·1	121
Woolwich...	41,409	—	10	17	—	—	—	—	1	—	28	8·8	—	—	—	6	2	—	—	—	1	9	2·8	62	19·5	73
Lee	39,215	—	19	9	—	1	—	—	7	—	36	12·0	—	—	—	3	—	—	1	—	—	4	1·3	61	20·3	174
Plumstead	61,057	—	22	5	—	1	—	—	1	—	29	6·2	—	—	—	1	4	—	—	—	1	6	1·3	66	14·1	105
Port of London	—	5	2	—	—	—	—	—	—	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including 51 cases of membranous croup.

† Including deaths from membranous croup.

Poplar sanitary areas. The 52 fatal cases of scarlet fever were 24 below the corrected average number; the mortality from this disease showed no marked excess in any of the sanitary areas. The 181 deaths from diphtheria were 36 above the corrected average number; this disease was proportionally most fatal in Shoreditch, Bethnal Green, Mile End Old Town, Rotherhithe, Camberwell, Lewisham, Woolwich, and Lee sanitary areas. The 175 fatal cases of whooping-cough were 102 below the corrected average number; among the various sanitary areas this disease showed the highest proportional fatality in St. James Westminster, Newington, Camberwell, Greenwich, and Plumstead. The 40 deaths referred to enteric fever slightly exceeded the corrected average number; this disease was proportionally most fatal in Clerkenwell and City of London sanitary areas. The 58 fatal cases of diarrhœa almost corresponded with the corrected average number. In conclusion, it may be stated that the mortality in London during February from these principal zymotic diseases was more than 26 per cent. below the average.

Infant mortality in London, measured by the proportion of deaths under one year of age to births registered, was equal to 126 per 1000 during February, and was below the average. Among the various sanitary areas the lowest rates of infant mortality were recorded in Hampstead, St. Pancras, Stoke Newington, St. Martin-in-the-Fields, Strand, Mile End Old Town, and Woolwich; and the highest rates in St. James Westminster, St. Giles, Clerkenwell, Limehouse, St. George Southwark, St. Olave Southwark, Rotherhithe, and Lee.

THE SERVICES.

ARMY MEDICAL STAFF.

SURGEON-CAPTAIN A. W. BEWLEY and Surgeon-Major S. Westcott have arrived in Dublin for duty.

Surgeon-Lieutenant-Colonel J. Ring to be Brigade-Surgeon-Lieutenant-Colonel, vice E. Townsend, promoted. Surgeon-Captain James W. Jennings is seconded for service with the Egyptian Army.

INDIA AND THE INDIAN MEDICAL SERVICES.

Surgeon-Colonel W. P. Warburton, Inspector-General of Civil Hospitals, North-Western Provinces and Oudh, is appointed to officiate as Director-General, Indian Medical Service, and Sanitary Commissioner with the Government of India, during the absence on deputation of Surgeon-Major-General J. Cleghorn, or until further orders. Brigade-Surgeon-Lieutenant-Colonel T. H. Hendley, C.I.E., Residency Surgeon, Jeypore, and Administrative Medical Officer, Rajputana, is appointed to officiate as Inspector-General of Civil Hospitals, North-Western Provinces and Oudh, during the absence on deputation of Surgeon-Colonel W. P. Warburton, or until further orders. Surgeon-Captain W. H. Ogilvie, Bengal Establishment, whose services have been temporarily placed at the disposal of the Chief Commissioner of the Central Provinces, is posted to the Jubbulpore District, on special famine duty. Surgeon-Lieutenant R. F. Standage is appointed to be District Medical Officer, Sholapore. Surgeon-Lieutenant-Colonel J. McCloghry to be Civil Surgeon, Kurrachee. Surgeon-Major W. H. Burke to be Medical Officer to the Kathiawar Political Agency and in charge of the West Hospital, Rajkote. Surgeon-Captain J. B. Smith and Brigade-Surgeon-Lieutenant-Colonel C. T. Peters have respectively delivered over and received charge of the Bijapore Prison. Brigade-Surgeon-Lieutenant-Colonel C. T. Peters and Surgeon-Lieutenant-Colonel H. McCalman have respectively delivered over and received charge of the Dharwar Prison.

NAVAL MEDICAL SERVICE.

The following appointments are announced:—Staff Surgeon M. J. McCarthy, M.D., to the *Wildfire*, for Yarmouth Hospital. Surgeons: J. W. W. Stanton to the *Plassy*; R. S. Bernard to the *Pigeon*; H. A. Julius to the *Magdala*, additional for disposal; W. R. Center to the *Cambridge*; W. S. H. Sequeira to the *Seaflower*; J. C. G. Reed to the *Martin*; W. M. Keith to the *Nautilus*; W. E. Mathew to the *Pilot*; W. H. Thomson to the *Lion*; W. D. Adams to the *Sealark*; A. T. Wyzard to the *Wanderer*; and Cornelius Bradley to the *Melampus*.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant F. J. L. Warwick to be Surgeon-Captain.

VOLUNTEER CORPS.

Artillery: 4th Lancashire: Surgeon-Captain T. B. Grimsdale, M.B., resigns his commission. *Rifle*: 2nd Volunteer Battalion the Royal Scots Fusiliers: Surgeon-Lieutenant J. Highet, M.D., resigns his commission. 1st Volunteer Battalion the Cheshire Regiment: Surgeon-Lieutenant E. R. W. Spratly resigns his commission.

THE WRECK OF THE "WARREN HASTINGS."

The public generally, as well as the army particularly, will feel grateful to the Queen for the telegram expressive of Her Majesty's appreciative recognition of the admirable discipline and conduct of the troops belonging to the King's Royal Rifles and the York and Lancaster Regiment on the occasion of the wreck of the *Warren Hastings*. There is no need to enter into the details of the occurrence, for they are probably fresh in the recollection of most of us. It may suffice to say that nothing was wanting to make up a situation that would try the nerves of the strongest, and that any want of discipline would most probably have been attended with terrible results. There was a strong squall blowing with heavy rain when the ship struck. The soldiers in obedience to orders fell in on the main and troop decks, so as to leave the upper deck free and allow of preparations being made for disembarking; meanwhile, darkness came on and about a thousand men formed a gangway and passed the women and children along, and they were all safely landed on the rocks. The ship was at an angle of about 50°, and had there been any pushing or struggling a number of lives must inevitably have been lost, but there was none; the most perfect discipline was maintained. The position of the engineers in charge of the ship's engines on such occasions as these, or on board one of Her Majesty's ships during a naval action, is one of the most trying that can be conceived, and the "greasers," as such men are often chaffingly nicknamed, who do their duty in times of the gravest danger are among the grandest fellows in existence; they nobly stuck to their work on this occasion, and the coolness and conduct of all, especially of the captain of the ship, seem to have been admirable. On reading a description of an occurrence of this kind the destruction of the *Birkenhead* is called to mind. If we remember aright, the account of that disaster and of the bravery and grand discipline displayed by our troops on that occasion was, by order of the King of Prussia, read out to his troops on parade.

A NEW HOSPITAL FOR WOMEN AT ALDERSHOT.

The wooden hospital which for years has done duty at Aldershot camp for the benefit of the soldiers' wives and families is to be superseded by a new extension of the Cambridge Hospital. Her Royal Highness the Duchess of Connaught laid the foundation-stone of the new wing on March 1st, and when finished the new buildings will consist of two wings, or eleven wards, with a total accommodation of fifty-four beds, in addition to the quarters for nurses and staff. An advantage of the new arrangement is that the staff of the whole hospital will be consolidated and will work in touch with each other.

DEATHS IN THE SERVICES.

Surgeon Richard Henry Way, R.N., at Warrigi, on service with the Benin Expedition, on the 21st ult., aged twenty-nine years. He was appointed Surgeon in 1894.

Brigade-Surgeon-Lieutenant-Colonel D. A. Leslie, A.M.S., medical officer in charge of troops, Perth, on Friday morning, March 5th. He served in the Bhootan Expedition in 1865, including the re-capture of Dewangiri, and was awarded a medal, with clasp.

THE OPERATIONS IN MATABELELAND AND MASHONALAND.

The following members of the medical profession have been mentioned in despatches:—Surgeon-Lieutenant-Colonel J. A. Gormley, A.M.S., Surgeon-Captain Hale, A.M.S., Mr. Strong, Mr. Sutcliffe, and Mr. Redpath.

The *Bombay Gazette* says:—"Surgeon-Major Hatch, Principal of the Grant Medical College, with two of his servants, Surgeon-Captain Childe, Professor of Pathology in the same college, a Parsee medical man, a Parsee member of the corporation, a Mohammedan veterinary inspector in charge of the Lazaretto at Sewri, and a Maratha Hindu in municipal employ have been inoculated against the plague at the Petit Laboratory, Grant Medical College, Byculla, by

Professor Haffkine. The learned professor, who has prepared the prophylactic lymph, was the first to set the example of making the experiment on the human subject by inoculating himself. It is satisfactory to know that representatives of the various races and creeds in Bombay have not hesitated to follow their example."

The Hants Company Militia Medical Staff Corps will assemble at Netley on May 1st for sixty-three days' preliminary drill, recruits' musketry to take place at Browndown Fort, Gomer. The annual training of twenty-seven days will be as follows: Assembly July 3rd, 1897; dismissal, July 29th, 1897; place of assembly and training Netley.

An obstinate outbreak of measles has taken place on the *Impregnable* training ship at Devonport. There were seven cases removed to hospital on one day last week, and there have been several cases since.

The s.s. *Britannia* has brought home 296 patients for the Royal Victoria Hospital.

Correspondence.

"Audi alteram partem."

"A QUESTION FOR ANÆSTHETISTS."

To the Editors of THE LANCET.

SIRS,—In my short article published in THE LANCET of Feb. 20th under the above heading I drew attention to the fact that the apparatuses used by anæsthetists were in hospital practice passed from patient to patient without being subjected to sterilisation, and that I believed the lung affections commonly attributed to the anæsthetic might very possibly be due in part to infected apparatus. I stated that, whereas in almost every other department rapid progress had been made of late in rendering the patient safer by thorough disinfection of his environment, the danger to the patient of directly applying over his nose and mouth an inhaler that had been used by others had not yet presented itself apparently to the workers in the special field of anæsthetics. To many with whom I have spoken my suggestion has presented itself with such force that they have expressed astonishment that the possibility of danger from this source had occurred to no one before. True, some of your correspondents may have adopted ordinary everyday sort of cleanliness, but sterilisation of apparatus seems never to have occurred to anyone. Now, as all sepsis treated by physicians (I use the term to include all bacterial infection—typhoid, tubercle, &c.) must enter by the respiratory or alimentary tract, the danger of half-stifling a person with an apparatus impregnated by some other person's excreta (breath, sputum, or vomit) should, one would hope, appeal to something more than the imagination of an individual. Take, for instance, the case I had on the operating table a few days ago—a man I have been protecting from tubercle for more than eight years. He came first with tuberculous disease of the tarsus, which, under rest and mercury, subsided, and he was well for two years. He got a situation, the disease returned, went on to suppuration, and involved his ankle. He now had distinct signs of phthisis, blood-spitting, and consolidation of one lung apex. I amputated the foot and the phthisis remained quiescent for four years, though he continued to cough and physical signs were distinctly evident, yet he made rather than lost flesh. A few months ago he accidentally hit the knuckle of his left forefinger with a mallet. An indolent pulpy swelling formed, tuberculous teno-synovitis around the extensor tendon ensued, and I advised the pulpy mass to be all dissected away. Chloroform was given to avoid irritating his tuberculous lungs. Junker's apparatus was used, consisting of a mask, with a somewhat complex top through which the vapour was forced, and whilst he was being put under the patient continually coughed, and on one occasion spat into the apparatus. Think of the next patient for whom this apparatus is used! Why, it is Villemin's original experiment over again without the record of the result, for this distinguished Frenchman first clearly showed the infectiveness of tubercle by tying masks infected with tuberculous sputum over dogs' noses. At the present time no one keeps the after-records of the innumerable experiments thus being daily made, and tubercle is too slow in its development to attract attention by immediate results.

The object of my article was not to impute blame, but to stimulate invention and to insist on greater cleanliness in the use of anæsthetic apparatus. I readily testify to the immense advance made in the more careful administration of anæsthetics during the last ten or fifteen years owing to the employment of gentlemen as special administrators and teachers in this branch. Many of these I count as personal friends, but I doubt if special anæsthetists have much opportunity of studying the after-results of their administrations or of distinguishing between the results of the operation and those of the anæsthetic. It is satisfactory to learn from your correspondence of last week that at one hospital the face-pieces and inhalers are cleansed every day after use, so that the first patient in the morning is lucky enough to have a clean apparatus. This is more than happens at many places, and in large hospitals, where there are often half a dozen operations going on at the same time, and each surgeon has two, three, or four cases in succession, the inhalers go from patient to patient without any attempt at sterilisation. It is agreeable also to note that a gentleman who scouts my suggestion of infection by inhaler as "not even a scientific possibility" goes on to say that "every inhaling bag, mask, and face-piece should be thoroughly washed, or scalded out if possible, between each case." A little more than this is just what I am contending for. I hold that every inhaler should be of such construction as to allow of complete sterilisation, and that this process should always be carried out before it is employed a second time.

It has been suggested to me that I ought not to criticise without being prepared with an alternative contrivance. My idea is that all masks should be made of toughened glass capable of being boiled, and that where a sponge or flannel receiver is employed an asbestos web which may be raised to white heat without injury should be substituted. Where respiratory bags are employed they should be made of red rubber or other material capable of being turned inside out and of resisting injury by boiling.

I am, Sirs, yours faithfully,

R. CLEMENT LUCAS, B.S. Lond., F.R.C.S. Eng.,
Surgeon to Guy's Hospital.

Wimpole-street, W., March 5th, 1897.

WATER-SUPPLIES AND MORTALITY FROM FEVER.

To the Editors of THE LANCET.

SIRS,—During the last two years it has been part of my official duty to investigate the variation and increase throughout Europe for the past half-century at certain periods of life of the rate of mortality among adult males. Incidentally I was led to examine into the relation between water-supplies and enteric fever. As Parliament will have in the coming session many projects for water-supply to large communities before them, I venture to ask that you will grant me a short space in your columns so that I may briefly place before your readers the rate of mortality in 1896 from fever obtained from various official Government statistics. For comparison and to avoid decimals I have computed the mortality from fever per 1,000,000 living from a few typical towns the water-supplies of which are drawn from widely different sources.

Rivers and Chalk.

London	137	Paris	110

Chalk.

Lemberg	288	Epsom (mean of last ten years)	190
Rouen (and wells; three-quarters of a year)	282	Portsmouth	153
Hull	280	Rheims	131
Norwich	193	Brighton	118
		Lille	70

Upland and Moorland.

Belfast	560	Birmingham (and wells in red sandstone)	214
Dublin	453	Leeds	213
Liverpool	322	Leicester	202
Sheffield	298	Brussels (and wells)	190
Manchester	229		
Glasgow	223		

Sand and Sand Lakes.

Copenhagen	74	Amsterdam	22
Berlin	65	Ghent	91
The Hague	38		

Limestone Water.

Linz	277	Gratz	101
Prague (and River Moldene)	214	Pilsen	91
Liége	117		

Filtered River Waters.

Magdeburg	84	Dresden	42
Hamburg	58	Frankfort	42
Cologne	49	Altona	41

Snow Water Lakes.

Zürich	104	Geneva	51
Lausanne	82		

Mountain Water.

Nuremberg	42	Munich	32
Vienna	40		

Other Sources.

Malines (shallow surface wells)	993	Charlottenburg (ground water freed from its ferruginous matter by process of exposure to air)	87
Antwerp (river water treated by iron filtration and shallow wells)	154	Bristol (red sandstone)	79
		Dorking (greensand; mean of last ten years)	70

Unfortunately I have been limited in my selection of English towns, as accurate information is at present unattainable owing to the fact that the Registrar-General's mortality returns for the whole of England and Wales for 1896 will not be published until 1898. It will be observed that towns drawing their water-supply from sands, melted snow, and rivers have a lower rate of mortality from fever than those drawing their supply from either chalk, peat, or moorland gathering ground.

Dr. Seaton, the county medical officer for Surrey, has shown in his report on water-supplies that the mean death-rate from enteric fever for the last decade for Epsom and Sutton, which obtain their water-supply exclusively from the chalk, was at the rate of 190 per 1,000,000 living, and that this rate was an increase over the mean death-rate of the previous decade. The mortality from fever at Reigate, another chalk supply, was 160. On the other hand, Dorking, which formerly derived its water from the chalk, but now obtains its water from greensand, had a mean death-rate of 70 per 1,000,000, and shows a material diminution in the death-rate from this cause. In Chertsey, which derives its supply principally from the Thames, the mean death-rate from typhoid fever was 90 per 1,000,000 during the same period. The chalk in the neighbourhood of our large towns is being progressively contaminated by the establishment on its surface of sewage farms, cemeteries, and even by the drainage from isolation hospitals. The rainfall percolating through a soil thus polluted must pass in a contaminated condition through the joint planes and fissures down to the subterranean streams, the reservoirs of this water-bearing stratum. Surely the time has arrived for legislation for the protection against further injury to this important source of supply. A glance at the foregoing table suggests the probable existence of a law which further investigation will either confirm or refute.

In conclusion, I trust that I have made out a *primâ-facie* case for an exhaustive Government inquiry as to the cause of the susceptibility to and immunity from fever amongst populations deriving their water-supply from various sources. Moreover, it is at least open to discussion whether municipal bodies, who are empowered to levy rates for sanitary administration, are suitable authorities to act as amateur managers of trading monopolies.

I am, Sirs, yours faithfully,

A. H. SMEE, M.R.C.S. Eng., F.S.S.,
Deputy Chairman and Chief Medical Adviser, Gresham Life Office, St. Mildred's House, Poultry, E.C.

DR. CULLINGWORTH AND PUERPERAL FEVER: A REFUTATION.

To the Editors of THE LANCET.

SIRS,—Attention has been called to remarks made by Dr. Cullingworth published in your issue of March 6th. As these are so unjust and so calculated to reflect discredit upon practitioners in private practice, I challenge their accuracy.

Dr. Cullingworth states: "Although puerperal fever has practically become a thing of the past in our lying-in hospitals ..... it is impossible to ignore the fact that there has not been a corresponding diminution of mortality from puerperal fever *in ordinary private practice*.' He does not produce any statistics to prove his assertion. His address will have attained the expected results if it is circulated among ladies connected with lying-in hospitals and midwives and so used to blast the good name of practitioners in "ordinary private practice." If the order has gone forth that no such a thing as puerperal fever *must* be officially recognised *in lying-in hospitals*, then I can understand the statement that puerperal fever is "practically a thing of the past." If the diagnosis of puerperal fever is left chiefly to midwives in hospitals, will it be recognised? It is not. Medical Officers of Health have complained of the ignorance shown by medical practitioners diagnosing cases of infectious fevers. It follows if practitioners are so badly educated that they can not *diagnose* puerperal and other fevers, the midwife will be more ignorant. Dr. Cullingworth has failed to tell us how many women *suffered from* puerperal fever, reference being made only to the number who *died*. Let us have a little light upon the number *attacked* in hospital.

The statistics relating to lying-in hospitals are misleading. Unfortunately, I had, when giving evidence before the Select Committee of the House of Commons, to show how sadly unreliable and wide of the truth these hospital statistics are. I pointed out that in most lying-in hospitals (*a*) all unmarried women are rigidly excluded, thus keeping out the illegitimate class, who have an exceptionally high death-rate; (*b*) that in others, those women pregnant for the first time are excluded, thus shutting out those who give the highest death-rate of all—1 in 15; (*c*) that women who had no child living were refused help, thus excluding those malformed or who had some maternal disease which had caused the infant's death; (*d*) that a large number of women leave the lying-in hospital within from seven to ten days after confinement, and are afterwards lost reckoning of; (*e*) that confined women attacked with fever, &c., are removed from the lying-in to a medical or surgical ward or to a fever hospital and are thus lost sight of; (*f*) that the rule of the Registrar-General is frequently ignored which requires that when a woman dies within thirty days after her confinement this fact should be stated in the certificate of the cause of death; and (*g*) that when lying-in hospitals have a low death-rate this is due altogether to the fact that medical practitioners are called in to assist by operation, &c.

The Rule of the Registrar-General of Deaths is:—"Whenever childbirth has occurred within one month before death, the fact should *invariably* be certified, *even though* it may appear that the childbirth has no connexion with the cause of death." How can lying-in hospital statistics include all, up to one month, when many of the women leave within seven to fourteen days after childbirth? Practically all who have left, and who die within seven or fourteen days are omitted. Mr. E. Hart, in his book "Compulsory Notification in England and Wales," p. 45, states that puerperal fever is not even notified, and in this he is backed up by the opinion of health officers. Neither are the deaths from puerperal fever notified to the Registrar. Of what use therefore are such statistics of puerperal fever? None whatever, except to make our profession a laughing stock. Even Dr. Cullingworth does not understand these statistics, as he says: "Deaths occurring in childbed from pre-existing disease, or from causes not directly connected with childbirth, though taking place during labour, or during the lying-in period, are left out of account." The very opposite is the case, as will be seen from the above quoted Rule. If his lapse is used in connexion with lying-in hospital statistics it furnishes another instance of the unreliability of hospital statistics. With such a proviso all deaths could be evaded.

Dr. Cullingworth, although he speaks of "Puerperal fever," fails to tell us what is "puerperal fever"? I have asked for a definition, but the "learned body" of persons connected with the Obstetrical Society seem to be as shy of defining it, as they do of the term "natural labour"! Puerperal fever means—fever in a puerpera. In the 2nd Edition of "The Nomenclature of Disease" page 9 it is stated "the term puerperal fever should no longer be used." Yet we have Dr. Cullingworth using it, and using it so as to reflect discredit upon practitioners. In the 1893 Report of the Registrar General we have the statement that 20,856 infants died from "convulsions," and 4 057 from "teething." These words—"convulsions" and "teething" no more give the true and accurate causes of death than do the words "puerperal fever." As regards the prevention of puerperal fever Dr. Cullingworth has the great supposed panacea of

the hour—antiseptics. Dr. Bantock has urged absolute cleanliness in our work. This is all that is required. However, as some clergy have entered in House of Lords floating in on "the odour of sanctity," and as some have become "Peers through Beer" so I suppose others hope to obtain popularity by wildly suggesting antiseptics for everything—lying-in cases included.

It is said that Dr. Cullingworth's mind is so saturated with antiseptics. He says all the puerperal fever deaths are chiefly due to the want of antiseptics. I would, however, rather ask him and others to widen their range of observation and to consider whether the chief causes of puerperal fever and the deaths therefrom are not due to the lamentably poor training which Students now receive in Obstetrics. This is the pivot of the whole question. How many students ever see a case of puerperal fever? If Dr. Cullingworth's statement as to this fever being absolutely "unknown" in hospitals is accurate, it follows that it is an impossibility for them to see a single case! This, too, although from 1871 to 1893 no less than 48,375 mothers died from puerperal fever, and 50,211 from the accidents of childbed. Happy hospitals! When in 1889, I began to look into this sad question of puerperal mortality, I thought it better first to find out something as to how students were "educated"—if I may use that word. The following table shows how students were educated then:—

Name of Examining body.	Lectures in Midwifery, Diseases of Women and Infants.	Clinical Instruction at Maternity Hospital.	Number of confinements to be attended by each student.
Royal Colleges of Physicians and Surgeons, London	3 months and	3 months	and 20
Society of Apothecaries	" " "	" "	" "
University of London	1 course	—	20
University of Oxford	0	0	0
University of Cambridge	1 course	—	20
University of Durham	3 months and	3 months	and 20
Victoria University	6 " and	3 "	and 20
Royal College of Physicians and Surgeons and Faculty of Physicians and Surgeons, Glasgow	3 "	—	and 6
University of Edinburgh	6 " and	3 "	or 6
University of Glasgow	6 " and	3 "	or 6
University of Aberdeen	6 " and	3 "	or 6
University of St. Andrews	6 " and	3 "	or 6
Royal Colleges of Physicians and Surgeons, Ireland	6 " and	6 "	and 30
Royal College of Surgeons and Apothecaries' Hall	6 " and	6 "	and 30
Royal University ...	6 " and	6 "	and 20
University of Dublin	6 " and	6 "	Not stated

In November, 1890, I memorialised the Medical Council upon the death-dealing state of affairs as shown by the above table. As nothing was done the subject came up again before the Medical Council; and again in 1895. The recommendation of the Council and the Examining Bodies, as agreed upon in 1888, was, that any student was to be admitted to the "final" who showed he had conducted three labours! Three labours! Is it any wonder that at least sixteen women each day die in England from what we dishonestly term "accidents of childbirth"? Would not a little "more light," instead of the antiseptic craze, lessen this terrible death-rate? Fancy the University of Oxford up until 1895 granting its degree to men who had not to present any certificate of theoretical or practical instruction in midwifery! Fancy the Scottish Universities demanding attendance upon 6 labours only! The wonder is that the maternal death rate is not treble what it now is. Fortunately the Medical Council has withdrawn its death-dealing Resolution, and it now Recommends that the student must have been present at not less than 20 labours (instead of 12) and must have conducted throughout at least 5 labours (instead of 3). This is a magnificent piece of herculean work for the Medical Council, and we must, at present, be content, that it has shown that after five years' pushing it can move! Did the public know the real reason of its not having moved, I think it would be hissed out of existence. The next method by which Dr. Cullingworth can lessen the puerperal mortality would be by increasing the stringency of the medical examinations. If fewer men were "qualified to kill," and more "qualified to cure," the death rate and sick rate would diminish. But what can we expect when we are told by men that the adding of a teaspoonful of carbolic acid to a pint of water is to abolish puerperal fever! It sounds rather like Count Mattei's "green electricitus."

Dr. Cullingworth thinks the great cause of puerperal fever is untrained midwives, and that if they were only licensed, fever would diminish. That is, the mere placing of the "10,000 to 15,000" of the present untrained midwives,—whom he says are doing such harm,—would stop the trouble! This is simple! It is almost as ghastly as the Rules of the Obstetrical Society—which provide that any woman may enter for the Diploma in Midwifery of the Obstetrical Society who can show that she has examined and attended 20 labours, under the care of another midwife, or matron of a hospital. Such, according to the President of the Obstetrical Society is the way in which the puerperal mortality is to almost disappear. Dr. Cullingworth refers to himself as—"a responsible teacher of midwifery." Also he says, "the Obstetrical Society has always been foremost in the effort to reduce the present terrible mortality from childbirth." This seems strange in face of the above fact, that any woman who has attended 20 confinements with a midwife—not having attended one solitary lecture—is qualified to practise midwifery. However, here is the test of this "foremost" policy. Clause 3 of the present Midwives Bill proposes to punish any person who unlawfully uses the term "midwife" with a fine not exceeding £5. Clause 13 of the Plumbers Registration Bill proposes to fine any person using unlawfully the title of plumber a sum not exceeding £20. This is a fair sample—the difference between £5 and £20—of the "foremost" anxiety of the Obstetrical Society to "diminish child-birth mortality." He also quotes Dr. Williams as stating that midwives "often spread puerperal fever broadcast and are often not interfered with." If this be true I think the medical officer for Glamorgan is hardly doing his duty; because such midwives can be brought before the coroner or magistrate and suspended from acting. Again, reference is made to certain districts in Wales in which the people have not the means of employing a practitioner. Need I repeat that each Board of Guardians in Wales has now power to pay a fee of from 20*s.* to 40*s.* to any practitioner they appoint to act in all poor confinements. If the practitioners and people of Wales fail to do so, then let them take the consequences.

I am, Sirs, yours truly,

Liverpool, March 10th, 1897. ROBERT R. RENTOUL.

THE INCIDENCE OF PUERPERAL FEVER.

To the Editors of THE LANCET.

SIRS,—In reading Dr. Cullingworth's article on Puerperal Fever and after studying the accompanying map of London it has struck me that the position of the hospitals may have some effect on the incidence of this disease. If anyone will mark in his copy of the map the great teaching hospitals he will see that, with the exception of St. Mary's Hospital and the Royal Free Hospital, they are all situated in the lightly shaded districts—i.e., in those freest from this complaint. Is it not probable that the freedom from puerperal fever is due to the fact that the poorest and dirtiest persons around the hospitals are attended by the students, whilst in the outlying districts this class of individual is at the mercy of the untrained midwife?

I am, Sirs, yours faithfully,

H. BEALE COLLINS,

Medical Officer of Health, Kingston-upon-Thames.

Kingston-hill, March 5th, 1897.

THE MEDICAL STAFFS OF HOSPITALS AND HOSPITAL ABUSE.

To the Editors of THE LANCET.

SIRS,—In the first leading article in THE LANCET of March 6th, in dealing with this important question you give special prominence to certain opinions which I am supposed to hold in regard to it, which, to be quite accurate, require elucidation. I hope, therefore, you may be willing to open your columns to a discussion on the points raised, and that you will permit me to set forth a few practical aspects of the problem which must be realised and understood if any attempt at reform is to be fruitful in results.

First of all, it is essential to recollect that at the present moment the metropolitan hospitals need, as Dr. Glover has often insisted, "less criticism and more cash." If the present efforts to place the metropolitan hospitals once and for all upon a sound financial basis are supported, as they ought to be supported, by every intelligent person who realises the necessity for the maintenance at their full capacity and high administrative excellence of our London hospitals to-day, then, but only then, will all the money that is required be forthcoming. Any person, therefore, who obtrusively endeavours to draw the herring of controversy across the path to assured financial safety for our hospitals must, to say the least, be suspect as to his motives, and cannot claim now, much less if and when the money is raised, that he is entitled to be heard as a critic who has the well-being of the hospitals really at heart. If once the financial security of our hospitals is assured, every needful alteration of system can rapidly be secured if the profession so wish.

What the friends, and also the critics of hospitals, can very usefully do at the moment is, whilst leaving the time between now and Accession Day free to those who are endeavouring to raise money for the hospitals, to occupy their energies in organising, as you suggest, a conference of the coolest heads of the profession for the purposes of discussion, so as to secure united action and agreement as to the best course to pursue in the interests of everybody. If this is done, the managers of the hospitals, as well as the managers of the various organisations which exist for raising money on behalf of hospitals, will be in a position to deal with any existing abuses that may call for reform. In such circumstances the whole of the questions raised could be treated on their merits, seeing that the attitude of the medical profession will then for the first time in the history of this question, be accurately ascertained and demonstrably provable.

The union of the profession on the subject, or at least the union of those members of the profession who hold office as honorary medical officers of the metropolitan hospitals, is the keystone of the arch of reform. The managers of hospitals, or the most capable and important of them, are as anxious as anyone to reduce the number of out-patients, but they feel that they are not in a position to do this because the means of reduction rests rather with the medical profession than with the lay managers of hospitals to which medical schools are attached. At the present time the medical profession render eleemosynary service to the hospitals, and the governing bodies feel that, so long as the medical profession attached to hospitals desire,—as the managers believe them to desire—to encourage an increase in the numbers of out-patients admitted he managers do not see how it is possible for them, in face of their honorary medical staff's attitude on the question, to reduce the number of out-patients. Experience seems to prove that the managers are justified in their view, for the report of the evidence given before the Lords' Committee on Metropolitan Hospitals, by those who were responsible for the medical teaching at the London hospitals, shows these witnesses to have expressed the opinion, that to reduce the number of the out-patients would be to curtail, not the abuses, but the use of the out-patient department for clinical purposes. This testimony is the more remarkable from the circumstance, that it is in distinct conflict with the findings of Sir William Fergusson's Commission on Out-patient Hospital Administration in the Metropolis in 1871. That Commission recommended, amongst other excellent things, the two following, the adoption of which, in my judgment and experience, are essential to the effectual removal of the abuses complained of :—

1. In order to improve the clinical teaching of the out-patient departments of the special and general hospitals, it is desirable to curtail the present unrestricted system of gratuitous relief, partly by the selection of cases possessing special clinical interest, and partly by the exclusion of those who, on social grounds, are not entitled to gratuitous medical advice. 2. The payment of the medical staff engaged in out-patient work.

It will be seen that the first of these recommendations, made in 1871 on the highest medical authority, embodies the opposite view to that held by several of those who were responsible for the medical teaching at the London hospitals twenty years later. The second recommendation is further wise, because it would afford an opportunity, to make the out-patient department available under proper regulations, not only for the training of students, but for the practical instruction of post-graduates, so that the general body of the profession might not only be helped directly by the facilities for instruction thus afforded to them, but indirectly by securing that none but suitable cases—that is, suitable from a medical and social aspect—were dealt with as out-patients. I do not think it is sufficiently recognised at present by the honorary medical staffs of the hospitals, that it is their duty to see that the mean of efficiency of the general medical service available for Londoners, in the poorer districts especially, shall attain a much higher standard than at present exists. None who have been attached to a large London hospital for a number of years can have failed to realise this fact, for they must have had many cases brought to their notice which were under treatment before coming to the hospitals, and the condition of which when they arrived at the hospital gates proved the soundness of the view so generally held by the poor, that if they have anything the matter with them the best thing they can do, if they want to get speedily well, is to go straight to the hospital. I have ventured to put this point forward because I occupy a somewhat neutral position in the matter, and it is essential that we should look facts in the face.

If we can once secure the union of the profession on the subject, or, as I have said, at least the union of those members of the profession who are attached to hospitals in London, the reduction of the number of out-patients and the removal of the real abuses of out-patient departments could then be enforced in a businesslike manner without difficulty or hardship. If the general body of medical practitioners whose practices have been injured by the present system of out-patient relief choose to coöperate together and to make adequate representations to the members of the honorary medical staff of each of the great hospitals, the attitude of members of those medical staffs which still hold to the opinion that a continuous increase of out-patients is essential for clinical purposes must alter. With such a change of opinion the managers would be able to secure that the out-patient departments should henceforth be conducted with some regard to the interests of the great body of the medical practitioners as well as of the public themselves. There are several out-patient departments where an attempt at a remedy has long been under trial, notably at St. Thomas's Hospital and elsewhere. A brief account of the system of out-patient relief at every London hospital to-day would prove valuable at the moment.

I am of opinion, as I have always been, that the kindest thing to the patients and the best thing for the hospitals and the profession would be to determine to close the whole of the London out-patient departments for six months, providing, but only providing, that each hospital made adequate arrangements by which they could guarantee that every urgent medical and accident case would be treated promptly throughout the period of experiment. I hold to this opinion because I find, from the visits I have paid to the out-patient departments during twenty years, (I am not speaking here of the casualty departments, which in certain parts of London are as essential to our social well-being as the very air we breathe, for reasons which I need not go into now), that a very large number of applicants who frequent them are not in urgent need of medical treatment. Hence, I believe, if we were to close the London out-patient departments, with the safeguards already referred to, and to watch the effect of this closure upon the people, we should find, that the majority of the patients would in a few weeks adapt themselves to the altered circumstances. They might even realise, as Sir William Gull once said, that there was a limit to the craze for physic, and that as far as physic was necessary it could be procured for a payment within their means without resorting to the hospitals at all.

I should like to formulate certain other proposals for with the out-patient question, but I have already occupied

too much of your space. I will only, then, venture to say, that the statement you quote as mine, to the effect that the Council of the Hospital Sunday Fund is only a collecting body, requires modification. I find from the shorthand writer's notes of the speech to which you apparently refer (July, 1896) that the words used were as follows: "I think that the solution of the difficulty cannot be looked for from the council (of the Sunday Fund), which, after all, is a collecting body more than a criticising body. The solution must come from the leaders of the medical profession themselves and from the body of general practitioners who suffer from the growth of the out-patient department. ..... It is the duty of the medical profession to look this matter in the face and to deal with it on some principle which will reduce the evil and secure the proper interests of the medical men and the public. Until this has been done I hope the Council of the Hospital Sunday Fund will be content to do its work of collecting money without indulging in criticisms which must necessarily be directed to points which it could not follow up by enforcing reforms of a sufficiently drastic nature. ..... The managers of hospitals themselves cannot effectually interfere, until they have a request put forward in a practical form by their medical staffs, who have it in their power to remedy the existing difficulties." You will see that so far from "belittling the Council of the Hospital Sunday Fund or the religious bodies which so generously contribute to it," my speech really added to their importance by insisting that before any action was taken care should be exercised to secure that the Council possessed sufficient authority to ensure success. This policy, which Sir Sydney Waterlow, like myself has done his best to enforce for many years in regard to the Metropolitan Hospital Sunday Fund, has resulted in a number of improvements in the administration of the London hospitals, which have gradually attained so great an increase in efficiency that they may now be regarded, and with justice, as amongst the best administered institutions in the world.

I am, Sirs, your obedient servant,

HENRY C. BURDETT.

The Lodge, Porchester-square, W., March 6th, 1897.

THE PHYSIOLOGY OF THE VESICULÆ SEMINALES.

To the Editors of THE LANCET.

SIRS,—In his Hunterian Oration, as reported in THE LANCET of Feb. 20th, Mr. Christopher Heath quotes the following from John Hunter: "It is a discharge of mucus by the urethra which generally comes away with the last drops of urine, especially if the bladder is irritable, and still more at the time of being at stool, particularly if the patient be costive, for under such circumstances the straining or action of the muscles of these parts is more violent. It has generally been supposed that this discharge is semen, and the disease is called a seminal weakness; but it appears from many experiments that the discharge is undoubtedly not semen." Mr. Heath, so highly does he appreciate "the good common-sense teaching" of Hunter on this point, while according to his own showing he questions his authority or accuracy on many other points, affirms his acquiescence in Hunter's views as to the vesiculæ seminales. I have been in the habit for a long period of years of making microscopical and chemical examinations of the urine, and I have no hesitation in affirming as the result of that experience that both Hunter and Heath are in error. I believe that 50 per cent. of urethral discharges at stool under these circumstances contain spermatozoa in more or less abundance; but as to the pathological significance of their presence this is a totally different question. Unfortunately, on this and some allied sexual questions a silly professional *mauvaise honte* has consigned multitudes of young men to quacks, both within and without the profession, and left this subject as a fertile hunting-ground for the unscrupulous. For my own part, I do not think that the discharge of spermatozoa from the urethra at stool can be considered normal, and whether it absolutely has an influence on the sexual functions or not I am certain that many patients believe that it has. Certainly I have never witnessed any markedly serious consequences from the condition. I agree with Mr. Heath that the word "spermatorrhœa" should be eliminated from medical literature, and some years ago I suggested as a substitute the word "spermatorrhagia," which expresses a pathological condition of undoubted existence and no less undoubted gravity. There can be an excessive discharge of semen and a seminal incontinence prejudicial to health just as there can be an excessive drain of menstrual fluid and a too frequent occurrence of it noxious to health in the female. I do not think that there is a better established fact in physiology than that the vesiculæ seminales act as reservoirs for the seminal fluid. Their function is, in this case, absolutely parallel with that of the gall-bladder for the bile. They receive the seminal fluid from the testes and elaborate and perfect it as a secretion by the addition of a special secretion from their own walls. In the vesiculæ seminales the semen remains until it is expelled in sexual intercourse, or involuntarily discharged under the influence of a psychical erethism, especially during sleep, a condition which, within certain limits, is nothing more than absolutely normal in the continent after puberty. Like all the other organs in the body engaged in secretion and excretion, the vesiculæ seminales are excited to action by their special stimulus, and are therefore in connexion with corresponding centres in the cerebrum. During sleep the organic functions — those regulated by the sympathetic system — obtain an ascendency over those controlled by the cerebro-spinal system. While not absolute the distinction between the sympathetic and cerebro-spinal system is still convenient. Dreams are of two kinds: those induced by nerve stimulation and those arising from association of ideas. In this case a nerve impulse is conveyed to the brain from the engorged vesiculæ seminales. "A memory picture arises, a perception results" (Moll), and reflex action takes place through the spinal cord. The theory of the resorption of semen is entirely groundless, and consequently the outrageous treatment based upon it—viz., that of the late Brown-Séquard and his followers. Still, the semen becomes inspissated in the vesiculæ seminales according to the length of time that it remains there, and this is due to the resorption of its more watery portion just as a certain amount of resorption takes place in the larger bowel.

I am, Sirs, yours faithfully,

D. CAMPBELL BLACK, M D. Glasg., F.R S. Edin.,
Professor of Physiology in Anderson's College Medical School.
Glasgow, Feb. 20th, 1897.

P.S —I should have noted that Hunter says that it is mucus which "generally" comes away from the urethra with the urine and at stool, and then he says the discharge is not "semen." If it is not "semen," and if it is not always "mucus," what is it?

LIGATURE OF THE SUPERFICIAL FEMORAL ARTERY FOR POPLITEAL ANEURYSM.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Feb. 27th Mr. Frederick Page records a case of Popliteal Aneurysm successfully treated by Ligature of the Superficial Femoral Artery in Scarpa's Triangle and states his own favourable experience of the results of the operation. Before deciding, as some surgeons have suggested, to abandon this simple operation for the far more difficult alternatives of ligature of the popliteal artery close above the aneurysm or complete excision of the aneurysmal sac, it must be shown that the ordinary method of treatment is not attended with the measure of success with which it is usually credited. Gangrene of the limb and recurrence of pulsation in the aneurysm are the two very opposite accidents which may follow the operation. Regarding gangrene, it may at once be said that it rarely follows the application of a ligature to the femoral artery for the cure of a popliteal aneurysm, and that on this ground alone no one will be disposed to condemn the operation. When, however, we come to consider the question of recurrent pulsation the position of the operation is not quite so sure. From the reports of St. Bartholomew's, St. Thomas's, and University College Hospitals published since 1886 I have collected thirty-one cases in which the femoral artery was tied at the apex of Scarpa's triangle for popliteal aneurysm. In twenty-three cases the aneurysm was cured without the occurrence of any complication. In two cases gangrene followed the operation and necessitated amputation through the lower part of the thigh, both patients recovering. In a third case amputation was performed a month after the operation for ulceration and anæsthesia

of the foot, probably caused largely by attempts to straighten the flexed knee. In the remaining five cases pulsation recurred in the aneurysm. In one of these the pulsation was slight, and was cured thirteen months after the operation by resting the limb in the flexed position for twenty-five days. In the second case the artery was tied without rupture of its coats; pulsation returned on the day after the operation and was successfully treated by exposing the artery, applying ligatures above and below the previous seat of ligation, and excising the intervening portion of the vessel. In the third case the recurrent pulsation was arrested by ligature of the popliteal artery above the sac, and in the fourth and fifth cases by excision of the aneurysm. We may, I think, fairly exclude the first two of these five cases, because in one so long an interval elapsed before pulsation returned, and in the other there is good reason for thinking that the lumen of the artery was only incompletely closed by the first ligature. This gives 3 cases of recurrent pulsation in a total series of 29 operations, or adding these cases to the twelve given by Mr. Page, 3 recurrences among 41 operations. Unless, therefore, the results in these two series of cases have been unusually satisfactory they certainly afford very favourable evidence on behalf of the treatment of popliteal aneurysm by ligature of the superficial femoral artery. Among 43 cases there was no death, although four patients were submitted to amputation for gangrene or ulceration. In 34 cases there was uncomplicated recovery, whilst in 5 subsequent treatment was required for recurrent pulsation, the operation in 3 of these having been preceded by a trial of digital compression. The evidence seems, therefore, to support the view that in the majority of cases of popliteal aneurysm it is wise to ligature the superficial femoral artery without resorting to digital compression before the operations. Further experience will probably show that the best available operative treatment for recurrent pulsation is excision of the sac. I may mention that in the published reports of the three hospitals mentioned above I can find only one case in which the popliteal artery was ligatured as a first means of treatment and that the result was successful.

I am, Sirs, yours faithfully,

Weymouth-street, March 4th, 1897. RAYMOND JOHNSON.

"LUXATION OF A SESAMOID BONE OF THE GREAT TOE."

To the Editors of THE LANCET.

SIRS,—Is it not possible that the displaced sesamoid bone referred to in your annotation on Mr. Thorburn's case[1] had nothing to do with the symptoms? In most skiagraphs of the foot that I have seen this bone is apparently luxated or subluxated outwards. Probably this is due to the average boot, which displaces the phalanx, which in its turn carries with it the flexor tendons and the sesamoid bones. The condition is, I suspect, an universal accompaniment of hallux valgus, and the displacement varies with the amount of the deformity. I enclose a print which well shows the shadow of the sesamoids, the outer one being almost clear of the outer margin of the metatarsal bone, and the inner one showing as an increased shadow under the head of that bone. The skiagraph in question was taken to locate a needle in the foot. The valgus deformity was not well marked. This patient suffered no inconvenience from the needle or the "luxation of the sesamoid bone." I may add that the Crookes's tube was placed over the middle of the foot, so that the shadow is rather displaced inwards than outwards. In another case where the tube was placed internally to the inner border of the foot the displaced bone also shows clearly. I am, Sirs, yours faithfully,

Seymour-street, W. E. MUIRHEAD LITTLE.

*** Mr. Little encloses a skiagraph which shows well the displacement referred to.

THE HEALTH OF THE ARMY IN INDIA.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 6th you give my name as a member of a committee, appointed by a meeting held at the United Service Institution on Feb. 27th, to obtain the protection of Her Majesty's forces in India from contagious diseases. Allow me to state that I was not at the meeting and have not joined the committee, of which, indeed, I know nothing except from this statement.

I am, Sirs, yours faithfully,

J. F. PAYNE, M.D. Oxon.

Wimpole-street, Cavendish-square, W., March 8th, 1897.

[1] THE LANCET, Feb. 6th, 1897.

"INSUSCEPTIBILITY TO VACCINATION."

To the Editors of THE LANCET.

SIRS,—In the supplement to the *Scientific American*, dated Dec. 26th, 1896, there is an article from THE LANCET on "Insusceptibility to Vaccination," which concludes with these words: "Although insusceptibility is admitted by law it really becomes doubtful whether it has more than a legalised existence." That insusceptibility exists I am convinced, for I have vaccinated one of my daughters with lymph from arm to arm at least fifty times, and brother practitioners have also vaccinated her as many times more (in most cases with perfectly fresh lymph from arm to arm) between the years 1873 and 1895, and always unsuccessfully. This, it is true, is but one case, but it is sufficient to prove that insusceptibility exists. I am, Sirs, yours truly,

Iquique, Chile, Jan. 22nd, 1897. J. W. MERRIAM, M.D.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

To the Editors of THE LANCET.

SIRS,—The next annual meeting of this association will be held in Newcastle, at the College of Medicine, in the latter part of July. Notice of the dates and other particulars will be issued in due course. A considerable part of the time of the meeting will be devoted to discussions, papers, and demonstrations on subjects connected with Insanity and the Structure and Functions of the Brain and Nervous System. It is hoped that a large gathering of members will be present to show their interest in the work of the association, to read papers, and take part in the discussions. It is desired to provide a programme worthy of the association and of the wide field of scientific and social subjects with which the association is concerned. We desire to incorporate as large a portion as possible of the programme in the next circular and shall be glad to receive at an early date the title of the paper which any member proposes to read at the meeting or subject he designs to bring before it.

We are, Sirs, faithfully yours,

T. W. MCDOWALL, M.D. Edin.,
President-elect,
Northumberland County Asylum, Morpeth;
R. PERCY SMITH, M.D. Lond.,
Hon. General Secretary.

11, Chandos-street, Cavendish-square, London, W., March 10th, 1897.

"CORONER AND MEDICAL MAN."

To the Editors of THE LANCET.

SIRS,—In reply to Dr. Snell's question, a coroner can issue no *order for burial* unless he holds an inquest. It frequently happens that cases are submitted to the coroner by the registrar, medical men, and others for his judgment as to whether an inquest should be held or not, and in these cases, when he considers an inquest unnecessary, he fills up a form supplied by the registrar. This is not an *order* for burial, but merely a statement that the coroner does not intend to hold an inquest, and although the alleged cause of death may be entered the death is registered as uncertified. Supposing no certificate of the cause of death is obtained from a duly qualified medical practitioner, ignorant people often consider the form used by the coroner in declining an inquest to be a *burial order*, but it is not so.

I am, Sirs, yours faithfully,

March 6th, 1897. M.B.

THE CHOICE OF AN ANTISEPTIC IN MIDWIFERY.

To the Editors of THE LANCET.

SIRS,—Can you kindly, through the medium of your valuable journal, give me the following information, for which

I shall feel greatly obliged to you:—1. Has perchloride of mercury been absolutely demonstrated beyond doubt a more reliable antiseptic than carbolic acid in confinements? 2. Is biniodide of mercury as powerful and reliable an antiseptic as the perchloride, and is it less liable to cause mercurialism?

I have always used carbolic (1 in 40 to start with) for uterine irrigation with the best results. On one occasion only I used perchloride (a case of puerperal septicæmia), but after two or three days, there being no improvement, I changed to carbolic, and the temperature dropped at once. I am loth to give up what I have learned to trust and what has never failed me, but carbolic has been discarded in so many quarters that I feel doubtful if I am doing right in not changing. As regards mercury biniodide, I have seen it stated that it is as powerful an antiseptic as the perchloride and much less poisonous. Is this a fact? If so, why is it not used in preference for midwifery practice?

I am, Sirs, yours faithfully,

Feb. 22nd, 1897. ANTISEPTIC.

Our correspondent is referred to an Annotation in our present issue.—ED. L.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Ophthalmic Diseases at the Kirkdale Industrial Schools.

THE report of the Local Government Board inspector to his department on the unhealthy condition of the children's eyes at the Kirkdale Industrial Schools appears to indicate an unsatisfactory state of things. Out of 136 girls at the schools he found 45 suffering from granular lids, and 8 out of this number presented a severe form of the disease. Of 335 boys, 91 suffered from granular lids. In the nursery there were 45 children, 28 of whom were in a similar condition in a more or less infective form. One of the attendants, aged twenty years, was also suffering. Of 54 children in the infirmary 19 had the disease. It would thus be seen that 33 per cent. of the girls, 27 per cent. of the boys, 62 per cent. of the nursery children, and 33 per cent. of the infirmary inmates were suffering from granular lids in a more or less infective form. In looking through the medical officer's (Dr. McMurray) report book he found the term "preventive" used in relation to the course of treatment. Dr. McMurray explained that he could not say the treatment was curative; his object was to pick out cases of granular lids that were, in his opinion, in an infective condition, isolate and treat them for a fortnight or three weeks, and return them to the schools if he thought all risk of infection had passed away for the time being. From what he (the medical inspector) could see of the cases there was no doubt that Dr. McMurray was to a certain extent successful in his endeavour, but it could be easily understood how, if sixty or eighty children, a certain proportion in a chronic quiescent state, were drafted from Kirkdale to a certified home such as Layfield, the children might become active sources of infection. Dr. McMurray quite concurred with this view, and said that if he had facilities for isolation for a large number of boys and girls he would be able to treat adequately all cases of granular lids at present in the schools, and in two or three years could stamp out the disease. It seemed to be necessary that, under existing circumstances at Kirkdale schools the medical officer should be requested to make weekly examinations of the eyes of all the children so as to detect the first onset of sub-acute symptoms and at once place the children under treatment. The chairman of the select vestry thought that matters should not be prejudged until their medical officer was first allowed an opportunity of explaining. Subsequently at a meeting of the committee of the industrial schools Dr. McMurray furnished a report in which he refuted the allegations made by the Local Government Board inspector, as to the alarming presence of eye diseases among the children in the schools. The committee resolved to forward Dr. McMurray's report to the Local Government Board. The chairman was of opinion that the inspector's report was exaggerated, which was endorsed by other members of the committee, who expressed confidence in their medical officer. The inspector had also reflected on the condition and the treatment of some children's eyes in the Liverpool Workhouse—charges which were repudiated in forcible language by Dr. Alexander, the visiting surgeon. An ophthalmic surgeon would be of service here to give his opinion on the whole matter.

The Head Constable's Annual Report.

The head constable, in his annual report for 1866 to the watch committee, says that a great and steady improvement in the condition of the city as regards crime and disorder is disclosed. The decrease in intemperance has continued, and it is stated that there is now considerably less than one-third of the drunkenness that there was eight years ago. Proceedings against keepers of disorderly houses were taken in 139 fewer cases than in 1895, in 299 fewer than in 1894, and 456 fewer than in 1893. The head constable adds that the number of women of bad character in the city has not decreased in like ratio, if at all, and the facts mentioned last year still hold good. The table relating to the number of accidents reported by the police includes 159 cases of attempted suicide, of which 41 proved fatal; 151 individuals were bitten by dogs; 60 people fell from buildings, 5 of whom were fatally injured; and 444 individuals were run over by carts, &c., 20 deaths resulting. Burns, of which 66 cases were reported, accounted for 17 deaths. The total number of accidents reported by the police amounted to 3479, of which 188 proved fatal. Assistance was rendered by the police in 2861 cases as follows: Applying bandages in 91 cases; stopping bleeding, 29; administering emetics, 16; other assistance, 401; taken to hospitals, &c., for treatment (no first aid being rendered), 2295. Of the total number of apprehensions of drunk and disorderly persons, which amounted to 6146, there were 11 representatives of the "law, medical, and other professions." Let us hope that there was only one medical man of this number.

Liverpool Medical Club.

At a meeting of the members of the Liverpool Medicae Club, held on Feb. 17th, Mr. E. W. Barnes introduced thd subject of the Abuse of Medical Charity. He mentioned the various medical charities which were chiefly affecteh and clearly pointed out the main causes and effect of suce abuse. He estimated that about half-a-dczen only of the public medical charities in Liverpool (not including the Poor-law, which he did not consider abused) supplied something like 400,000 attendances annually out of a population of 644,129. The remedies he advocated were: (1) the formation of local hospital boards; (2) catering for the intermediate class of patient; and (3) the formation of local committees under the auspices of the Hospital Reform Association. After an exhaustive discussion, a resolution was unanimously carried "that the directors of the club be empowered to form a local committee of inquiry to report upon the matter as the first step."

The Tuberculin Test at St. Helens.

Dr. Robertson, the medical officer of health of St. Helens, recently demonstrated to the farmers of the neighbourhood by means of the tuberculin test that a heifer to all appearances perfectly healthy and in good condition may nevertheless be the subject of tubercle. For some time past the majority of the butchers of St. Helens declined to attend the local stock sales unless the auctioneers were empowered to give a guarantee against the presence of tuberculosis in the beasts sold. Hitherto a guarantee to this effect had been refused by the farmers; however, one of their number said that he would guarantee a three-year-old Ayrshire heifer. This gentleman had previously submitted five of his beasts to the tuberculin test, and although the test showed the beast to be affected when slaughtered two of them proved to be healthy. Upon hearing this statement the farmers were naturally inclined to discredit the tuberculin test. Dr. Robertson, when communicated with upon the subject, said that he could not believe that the test had failed; whereupon the same farmer again submitted one of the five beasts to Dr. Robertson and Mr. Dixon, veterinary surgeon. The beast, which was apparently in first-class health, again "reacted" under the test, and was declared by Dr. Robertson to be suffering from tuberculosis. The farmer, still unconvinced, said he would guarantee the beast at the approaching sale on condition that it was taken straight to the abattoir and slaughtered, which was accordingly done. The carcase proved generally healthy, but upon the lungs being examined one of them was found to be affected with chronic, though dormant, tuberculosis, the glands being also enlarged; whereupon the butcher who bought the beast was at once absolved from his bargain

under the terms of the guarantee. The farmers present were greatly surprised to find so healthy-looking a beast affected.
March 9th.

WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Bristol General Hospital.

THE half-yearly general meeting of the governors of this institution was held on March 8th, under the presidency of the Mayor. The annual report which was read stated that the appeal made for the Nurses' Home had resulted in the sum of £3237 being raised; this had been sufficient to discharge all liabilities incurred for building and furniture, but £350 had still to be raised to cover the cost of the houses which were pulled down for the purpose of the enlargement. The home is now finished and proves of great utility to the hospital. Exclusive of the special fund for the Nurses' Home, the total ordinary receipts are £9600, or less by £562 than those of 1895. The total ordinary expenditure (£10,633) is somewhat less than in 1895 owing to the smaller amount spent in repairs. This amount is much beyond the ordinary income, and the committee do not see how it can be reduced without impairing the efficiency of the hospital. The committee thank the honorary staff and the resident medical officers for the admirable way the work of the hospital has been carried on during the year. The daily average number of in-patients has been 171 6. The in-patients treated during the year were 2333, and the out-patients numbered 30,166, the totals for the year of both having slightly increased. Since the hospital had been established in 1832 there had been admitted 71,721 in-patients and 682,499 out-patients.

The Bristol Medical School.

The following scholarships have been awarded:—The Clarke Surgical Scholarship of £15 was equally divided between Mr. E. V. Foss and Mr. R. F. Moorshead. The Sanders Scholarship of £22 10*s.* was awarded to Mr. F. P. Mackie, and the Lady Haberfield Prize of £29 9*s.* 8*d.* to Mr. A. G. Plumley. The Martyn Memorial Pathological Scholarships were divided as follows: Mr. F. P. Mackie, £10; Mr. W. M. Bergin, £5; and Mr. H. L. Norrington, £5. The committee gold medal was gained by Mr. W. M. Bergin, and the silver medal by Mr. F. Rose.

Dr. Nansen.

Dr. and Mrs. Nansen arrived at Cardiff on Feb. 28th, and were received by Mr. Drane (president of the Cardiff Naturalists' Society), Dr. Charles Vachell, and others. Dr. Nansen delivered his lecture in the Park Hall the same evening, the building being filled to its utmost capacity. On March 1st Dr. Nansen gave a lecture in Bristol on his Arctic exploration and received an enthusiastic welcome. Professor Lloyd Morgan introduced the lecturer. Dr. and Mrs. Nansen were the guests of Mr. W. Sturge while in Bristol.

Public Health Department for Cardiff.

At a meeting of committees of the Glamorganshire County Council, held on March 5th, the question of providing a public health department in connexion with the University College of South Wales and Monmouthshire, and the provision of a laboratory for the county medical officers, was discussed. It was decided to recommend the council to subscribe £2000 towards a private laboratory and a department for the county medical officers in connexion with the new college buildings. The details were left to be dealt with by the sanitary committee of the Glamorganshire County Council.

A New Hospital for Cardiff.

At a meeting held on Feb. 24th at Cardiff it was decided to raise a fund for the purpose of erecting, as a memento of Her Majesty's reign, a permanent seamen's hospital for the port of Cardiff in place of the *Hamadryad* hospital ship. The Marquis of Bute has offered to subscribe £5000 and present a suitable site, provided that at least £30,000 were raised by subscriptions. Mr. Cory will give £1000, and other donations are promised.

Rabies and Anthrax.

At the quarterly meeting of the sanitary committee of the Glamorganshire County Council, held last week, the chairman reported that an outbreak of rabies had occurred in Monmouthshire. The inspectors were instructed to secure all stray dogs and to kill them if they were not claimed. Dr. Williams, the medical officer for the county, reported that an outbreak of anthrax had occurred in several districts, and recommended that in future carcases should be cremated instead of buried.

Successful County Court Action by a Bath Surgeon.

At a special sitting of the Bath county court, held on March 1st, Mr. R. J. H. Scott, F.R.C.S. Edin., surgeon to the Royal United Hospital, brought an action against a firm of Bristol brewers for personal injuries and damage to a brougham alleged to have been caused through the negligent driving of a drayman in the employment of the defendants. The charge was fully borne out by plaintiff and a number of witnesses. Mr. Scott obtained a verdict for £14 18*s.*

Aberystwith University College.

The council of Aberystwith University College has decided to spend £15,000 in finishing the erection of a new wing to the college buildings.

The Bridgwater Infirmary.

The heavy gale experienced in the West of England on March 3rd injured the Bridgwater Infirmary. Two chimneys were blown down and the débris broke through the roof and ceiling of the male wards. Fortunately the patients were unhurt. The furniture of the wards was much injured. The patients were removed to another ward. The damage done to the infirmary premises is very considerable.

Neglect of Vaccination at Swindon.

At the last meeting of the Swindon Board of Guardians the vaccination officer reported that in 1895 there were 1352 births, and of these children 319 were successfully vaccinated, 104 died unvaccinated, 600 remained unvaccinated at the present time, and the others had removed to other districts. For the first six months of 1896 the number of births was 650, of which 139 were successfully vaccinated, 70 died, 300 were still unvaccinated, and others were removed to other districts or were postponed. No action was taken upon the report.

A New Technical Institute for Bradford-on-Avon.

On Feb. 24th a new technical institute, erected at a cost of £3600 at Bradford-on-Avon, was opened by Professor Michael Foster of Cambridge University. Very handsome contributions have been given, including £1000 from the Wilts County Council and £1000 from Lord E. Fitzmaurice.

The authorities of the Newport Metal Exchange have voted 50 guineas to the new infirmary at Newport (Mon.).
March 9th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Glasgow Medico-Chirurgical Society.

AT a meeting of this society held on the 5th inst. Mr. R. H. Parry demonstrated a number of specimens of gynæcological interest. The specimens included several Fibroid Tumours of the Uterus removed by abdominal section, a number of the cases being complicated by pathological conditions of the ovaries and Fallopian tubes; the Uterus and Appendages removed *per vaginam* for an obstinate and long-continued chronic metritis; and a Tubal Pregnancy in the second month of gestation with the ovum *in situ* removed by abdominal section. There was in the last case a feature of special interest, inasmuch as the patient when seen by her medical attendant was regarded as suffering from retroversion of the uterus, and an attempt to forcibly replace the organ was followed by peritonitis. It was only on the subsidence of this condition that the tumour was discovered and a diagnosis of extra-uterine pregnancy made. Mr. Parry also showed a Segment of the Small Intestine resected for chronic obstruction due to stenosis of the gut, the result, it was suggested, of cicatrised tuberculous ulceration; and a Scapula with its Muscular Coverings removed in consequence of the growth of an adherent parosteal sarcoma. The demonstration was completed by the exhibition of a patient, a man who had been obliged to give up his work as a boiler-maker in consequence of the development of Spasmodic Torticollis. The head had been turned strongly to the left

side and the chin markedly elevated. This condition persisted even after resection of the right spinal accessory nerve. The suggestion then arose that the muscles at fault were probably the post-occipital muscles on the left side, and it was determined to divide the posterior primary divisions of the upper cervical nerves. This operation was carried out and had proved quite successful, the patient having been for upwards of a year quite free from any distortion of the head. The President (Dr. W. L. Reid), on behalf of the members, thanked Mr. Parry for his interesting demonstration.

Glasgow Southern Medical Society.

Professor McCall Anderson received the members of this society in his wards in the Western Infirmary on the evening of the 4th inst., when he gave a most instructive clinical demonstration. The patients shown included cases of Cerebral Tumour, Disseminated Sclerosis, Progressive Muscular Atrophy, Exophthalmic Goitre, Thoracic Aneurysm, and Molluscum Contagiosum. In addition Professor Anderson demonstrated a case of word-blindness with right lateral homonymous hemianopia, and several patients who had been treated by injections of tuberculin, with others in whom anti-syphilitic serum had been used. Various photographs illustrating the value of the Roentgen rays were shown, and also a specimen of urine containing hæmato-porphyrin. The demonstration was a decided success and was highly appreciated by a large audience.

Lecture by Professor McKendrick.

The fifth lecture of the series of free Monday lectures by the professors of the University of Glasgow was delivered by Professor McKendrick on the 8th inst., the subject being Sound Waves as Revealed by the Phonograph. After reference to the physical causes of pitch, intensity, and quality of sound, Professor McKendrick described an instrument called the phonograph recorder, by which curves corresponding to the marks of the wax cylinder of the phonograph are written upon a piece of paper. In this way curves may be obtained and analysed and the various partial tones which exist in a compound tone can be distinguished and appreciated. Professor McKendrick also showed a method he has devised for communicating sound vibrations to the deaf and dumb, and demonstrated this on several deaf mutes, who by beating time with their hands showed they were sensible of the rhythm of a piece of music. The lecture commanded a large audience, which included Lord and Lady Kelvin.

March 9th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS)

The Health of Kingstown.

THE chairman of the Kingstown Commissioners, Mr. A. S. Findlater, J.P., at the monthly meeting of the Board of Commissioners on the 2nd inst. drew attention to the sanitary state of the township and read the report of the superintendent medical officer of health on the condition of Kingstown during the four weeks preceding the beginning of last month. The returns showed that the number of deaths represented an annual death-rate of only 20·3 per 1000. The rate in the twenty-three principal towns of Ireland for the same period was 32·5, 45·3 in Dublin, 20·9 in Rathmines, 23·6 in Blackrock, and 18·6 in London.

Ulster Medical Society.

The March monthly meeting of the Ulster Medical Society was held on the 4th ult. in the Pathological Laboratory of Queen's College, Belfast, when a series of most interesting demonstrations were given with microscopic and other preparations. The President (Professor Symington) and Dr. Smyth showed specimens of the Central Nervous System stained by Weigert's method; the President and Dr. R. J. Johnstone showed specimens illustrating Cranio-cerebral Topography; Dr. Tennent read a paper on the Structure of Uterine Fibroids, illustrated with a series of microscopic sections; Dr. Lynass gave an account of Unna's Classification of Epitheliomata of the Skin, with illustrative sections; Dr. Lynass, Surgeon-Major Bigger, Dr. Donnan, and Dr. Colville demonstrated Widal's Serum Method of Diagnosing Typhoid Fever; Surgeon-Major Pike read notes of (*a*) a case of Injury to the Neck of the Femur, with skiagraph; and (*b*) Severe Secondary Syphilis complicated with Diphtheria in the primary stage, with photograph; Dr. Cecil Shaw showed a New Bacillus isolated from a case of Tonsillitis; and Dr. Osborne showed a series of Physiological Microscopic Specimens. In the discussion which followed the papers Professor Byers, Dr. M'Keown, Dr. John Campbell, Dr. L. Smith, Dr. Walton Browne, Professor Thompson, and Dr. Fielden took part. Lord Lister was elected an honorary member of the society.

The Hospital for Infectious Diseases, Belfast.

At a meeting of the public health committee held on March 4th, the question of the plans for the new hospital for infectious disease was under consideration, when a motion to adjourn the subject until after the election of the new council in November was carried. The question of a new infectious diseases hospital is therefore postponed, and as a consequence it will not be possible to work properly the Infectious Diseases Notification Act, which has just come into operation.

The Union Workhouse, Belfast.

In his half-yearly report just published, Mr. Agnew, Local Government Board inspector, says that the operating room was very unsuitable, and he thought the nurses' room could be easily utilised for that purpose. He thought the water-supply was neither sufficient nor wholesome. The wards of the workhouse and infirmary were not properly ventilated, and the lavatory and bathing accommodation on the healthy side of the house was unsuitable. Separate wards have not been provided for phthisical and erysipelas patients, as suggested in his last report, and there was no isolation ward for cancer cases. There were 1140 patients in the infirmary on the date of his visit under the charge of three resident and two visiting medical officers. The night nurses were insufficient, as several of them had 150 patients. There were on the day of his inspection in a separate and detached building, at a cost of £16,000, 418 classed as lunatics, 172 males and 246 females. The accommodation for these was, Mr. Agnew reports, ample and suitable and superior to any he had seen in Ireland. In the fever hospital the nursing staff was highly efficient and the medical staff admirably suited for the treatment of infectious diseases. The beds were comfortable, the clothing clean, and the patients well attended to.

Armagh Lunatic Asylum.

The urgent necessity of providing additional accommodation at the Armagh Asylum has been met by the erection, upon an elevated plateau within the asylum grounds, of a detached hospital (following the type found to be so successful in Scotland), planned to accommodate 150 patients under special treatment, together with the necessary attendants and staff. The building is almost complete, the only things to be done being the finishing of the electric installation and the furnishing of the wards. Indeed, owing to the overcrowding of the asylum, certain dormitories in the buildings have had to be occupied almost as soon as they were built. This detached hospital is the first of its kind in Ireland, and in its wards all the acute and recent cases requiring observation, as well as the bodily sick and other inmates who require specific medical care, will be brought together. The ventilation, building, and sanitary arrangements are all of the most recent and complete planning and construction; and this new detached hospital will be of the greatest utility as an addition to the Armagh Asylum.

The Battle of the Clubs at Cork.

Some few weeks ago Mr. Philip Lee received permission at a meeting of the profession to form a new club consisting of such members of the clubs he formerly held as may decide on joining together to form the club. Already fifty members have entered their names, and that is a large number considering the fact that none having incomes of £100 a year are eligible for membership. It is expected that others of the medical men who held clubs will seek for similar permission, and in that way there will be, it is hoped, several successful invasions of "Club-land."

Ladies as Poor-law Guardians.

At Tralee, Killarney, and Fermoy severally there are two ladies aspiring for the position of poor-law guardian. Opinion in the neighbourhoods is divided upon the advisability of employing the services of a lady, but it is generally felt that in workhouses and union hospitals there is a field for work that should properly fall to the gentler sex.

Hydrophobia.

A young girl died from hydrophobia in the Skibbereen

Workhouse Hospital last week. The disease is stated to have developed only two days previously, and the bite had been inflicted six or seven weeks prior to her illness.

Appointments.

Mr. W. H. Langley has been appointed medical attendant to the Ordnance Survey Barrack, Phœnix Park, and to the Morgan School, Castleknock, in room of the late Mr. R. F. Maguire, deceased. Mr. Joseph J. Cullen of Dalkey has been elected to the office of dispensary medical officer for the Castleknock district.

March 10th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Academy of Medicine and the Manufacture of Matches.

AN important discussion has occupied the time of many sessions of the Academy as to the hygienic conditions which it is desirable to impose upon the manufacture of matches. In France the manufacture of matches is a State monopoly and under State control, and in view of the numerous cases of illness among the workers and the many complaints which have been made in the press the Minister in charge has asked the Academy of Medicine to draw up rules for the regulation of the Government factories. Current opinion in the Academy was divided. One party advised that white phosphorus should no longer be used in the manufacture of matches, saying, also, that this advice was what the Minister really needed to satisfy the press and that the opinion of the Academy had been asked for in order to use it as a lever to obtain from the Chamber the supplies necessary for the complete transformation of the match industry throughout France. In Belgium it was noted that when the same reform was demanded, the workmen and manufacturers alike asked that, if the use of white phosphorus was forbidden in Belgium, its use should at least be allowed in the manufacture of matches intended for foreign countries, as its suppression would ruin the factories possessing the necessary plant, and bring great poverty upon the workmen thrown out of work. Others in the Academy, however, thought with M. Magitot and M. Bouchardot that it would be quite sufficient from a sanitary point of view to alter the arrangement of the workshops so as to obtain thorough ventilation, while refusing work to all who had not good teeth. The workers must be under strict medical supervision, and as far as possible machinery should be constructed so as to allow the whole process of manufacture to go on under glass, the workmen being protected from the poisonous fumes. In two factories—namely, at Algiers and Aix—there has not been a single case of phosphorus poisoning for twelve years, owing to the strict hygienic rules which have been in force. The cases which have so excited public opinion occurred at Aubervilliers, a suburb of Paris, in a very old factory, which it is impossible to put into a sanitary condition and which ought to be pulled down, as to make it really healthy would cost more money than to build a new one. The real fact is that the workmen of Paris object to the introduction of machinery for the safe manufacture of matches with white phosphorus—that is to say, under glass—for in that case far fewer hands would be wanted, and they therefore demand the use of red phosphorus, to work in which necessitates a larger staff. This is the reason why in Belgium, where the manufacture of matches is free to anyone, the workmen object to red phosphorus, and why, in France, the State, which panders to the political influence of the workers, is ready to satisfy them on this question, despite the increased expense. Matches made with red phosphorus are not so good as the others, for they are more difficult to light, the wood is very brittle and often breaks, and the composition for tipping them demands the use of explosive materials which, like poisoning, constitute a serious source of danger. The Academy has agreed to the following answer being sent to the Minister:—1. It is necessary to put a stop to the unhealthy conditions which exist in many of the match factories in France. 2. The suppression of the use of white phosphorus is the only certain way of insuring health to the workers in this manufacture. 3 The employment of perfected automatic machinery is a costly matter and carries with it the condition that all dangerous operations should be done under glass. 4 Until these recommendations can be carried out as a whole the present unhealthiness can be diminished by thorough ventilation, short shifts for those men working in the dangerous shops, careful selection of healthy hands, and periodical medical inspection, with power to prohibit the labour, either for a time or altogether, of anyone with lesions of the mouth or whose general health is impaired. There should also be better provisions provided at the factories and more rigorous inspection of eating-rooms, lavatories, cloak-rooms, &c.

Medical Matters and the Army.

The scarcity of army surgeons continues to be the subject of discussion in the army and the press. Resignations become more and more frequent owing to the dissatisfaction of the military surgeons, who complain that promotion is too slow, that they are the object of less consideration than other officers, and that they have to submit to frequent injustice through being attacked in the press and not supported by the War Minister. A resignation which has created great excitement has just taken place—namely, that of M. Laveran, ex-professor of the School of Military Hygiene, a member of the Academy of Medicine, and well known for his discovery of the hæmatozoon of malaria. The professors are nominated for ten years only, and at the expiration of M. Laveran's term his post was changed and he was sent by the War Minister to a provincial garrison town as a simple army surgeon, no regard being paid to his position as a member of the Academy or to his great scientific reputation. He remained for some time at this station with a rank far below that to which his length of service entitled him, coming to Paris and continuing his researches at the Academy. In consequence of the delays and worries which the War Department made him undergo, putting actual obstacles in the way of his scientific work, he preferred to send in his resignation and to quit the Army Medical Department, of which he had been a prominent figure, at the age of fifty-six years. Everywhere an increase in the number of army medical men is demanded, and in certain army corps where the regiments have been increased by a battalion the number of medical officers remains the same. At Epinal there is a regiment of infantry in which the men of one battalion have to go five kilometres to see the surgeon of the regiment, who is in sole charge of two battalions. The War Minister has just authorised privates and officers to join the Temperance Society (Société contre l'Usage des Boissons Spiritueuses). This is a remarkable thing, for in France soldiers are not allowed to join any society, even a charitable one.

The Surgical Society.

La Société de Chirurgie is at present discussing the operative treatment of exophthalmic goitre, and the members are bringing forward their cases of operation, successful or otherwise. M. Lejars reported a case of sudden death on the day of operation not to be explained by hæmorrhage or any other lesion. M. Schwartz reported a case of complete cure of all the symptoms associated with Basedow's disease, the tumour removed being of small size. M. Tuffier had operated twice. In one case he had removed, only the right lobe and the cure was complete; in the other he had also performed a partial removal, and though there was great amelioration of the symptoms, yet the exophthalmos persisted. M. Poncet attributed the accidents which sometimes followed these operations to an intoxication owing to the thyroid secretion having poisoned the wound, giving rise to an acute attack of "Basedowism." M. Poncet considered that the greatest precaution should be used with regard to surgical interference in these cases, and advised division of the large sympathetic nerve on both sides with removal of the superior cervical ganglion in preference to interfering with the thyroid gland. By this method he considered relapses would be avoided such as often occur with thyroidectomy.

March 9th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Bacillus of Plague.

A PAPER on the bacillus of plague was recently read before the Berlin Medical Society by Dr. Kolle, assistant to Professor Koch, and the substance of it has been published in the *Deutsche Medicinische Wochenschrift*. The microscopical examination of pus obtained from typical cases of

plague shows leucocytes, detritus, red corpuscles, and an enormous mass of bacilli, which are small, have spherical extremities, and are quite different from all the other pathogenic bacilli; when they are stained their extremities become intensely coloured, whilst the middle remains colourless. The only organism which can be confounded with the bacillus of plague is the bacillus of fowl cholera—a disease quite harmless to human beings; the bacillus of fowl cholera, however, is the larger of the two. The bacillus of plague is found in the glands, the spleen, and the blood. Plague must thus be regarded as a specific polyadenitis, which finally leads to specific septicæmia. In grave cases streptococci were, moreover, discovered by Dr. Aoyama. The presence of these streptococci is due to a secondary infection, just as in the case of scarlet fever, enteric fever, &c. They are found especially in the last stage of the disease and are easily distinguished by Gram's method, the plague bacillus remaining colourless whilst the streptococci become stained. The bacilli of plague can be cultivated by the usual methods. On agar the colonies begin to appear twenty-four hours after the inoculation; they at first look like small drops; after forty-eight hours they have the form of grey opalescent buttons. They do not liquefy gelatin. They can also be grown on potatoes and on blood serum, and in the cultures obtained in this way the morphology of the bacilli may be easily examined. They are usually short, not motile, and not provided with flagella; the presence of a capsule is still doubtful. The size is not very constant; sometimes they are very short, sometimes they are longer or have a diplococcus-like structure. A spheroidal form is a symptom of degeneration and is never found in fresh cultures, but only in old ones. Spores were never discovered. Kitasato and Yersin have stated that the cultures are destroyed in a few hours by a temperature of 58° C. and in a few minutes by a temperature of 100° C.; the usual chemical disinfectants destroy them very soon. Dr. Kolle employed four cultures for the purpose of his researches. The first was obtained from a case which occurred during the Hong-Kong epidemic in 1890, the second was placed at his disposal by Dr. Metchnikoff of Paris, the third by Dr. Macfadyen of the British Institute of Preventive Medicine, and the fourth by M. Haffkine of Bombay. In all these four cultures, coming from different sources, the bacilli proved to be identical; but there was, however, a great difference in their virulence. According to Kitasato and Yersin the virulence of the bacilli of plague may be easily studied in rats, mice, and guinea-pigs, which are very liable to be infected, and with this Dr. Kolle fully agrees. If only a small quantity of a fresh culture is inoculated through the skin of one of these animals it dies within a few days, and after death the bacilli are found in great quantity in the blood, the internal organs, and also in the neighbourhood of the wound. After an intra-peritoneal or intra-vascular injection death occurs much sooner—sometimes in a few hours. Injections of less virulent cultures give rise to symptoms very like those observed in the human subject. After four or five days the lymphatic glands gradually begin to swell, the animals lose their appetite, become very weak, and then die—as a rule within the second week. After death the glands are found to be inflamed and studded with hæmorrhages, while in the centre there is a deposit of pus. Rats and mice may also be infected either by mixing a culture of the bacilli with their food, in which case the mesenteric glands are the most swollen, or the disease may be communicated to the animals by inhalations. It is thus proved by these experiments that rats and mice may easily spread the disease, a fact in accordance with the observations of Yersin during the recent epidemic and also confirmatory of the historical accounts which state that during mediæval and subsequent epidemics these animals caught the disease prior to man. The infected rats and mice are a source of great danger to the public owing to their excrement being deposited in dwelling-houses. Experiments in laboratories must therefore be performed under every possible safeguard, and precautions must be taken to prevent infected animals escaping. With respect to the method of infection in man Yersin, Kitasato, and Aoyama have during the recent epidemic observed that the disease may originate from peripheral infection—namely, from inoculation of the bacilli through the skin. This may happen in different ways, as, for instance, through wounds, caused either by splinters or by bugs, fleas, or other insects. Yersin has discovered bacilli in the mud of houses where plague patients had lived. He has, also, made valuable experiments as to the possibility of immunisation. He injected horses with increasing doses of fresh agar cultures, and found that if 0·1 c.c. of their blood serum obtained three weeks after the last injection were injected into mice twelve hours before inoculation with a culture of the bacilli of plague the animals remained immune. By an injection of from 1 to 2 c.c. of this serum twelve hours after the administration of a virulent culture the life of the animals could be saved. The serum was used in Hong-Kong for twenty-six patients, of whom only two died; this is a mortality of no more than 7·6 per cent, whereas the ordinary mortality from plague is 90 per cent. Experiments on immunisation have also been made by Dr. Kolle, but he is not yet prepared to publish his results.

Sterilisation of Water by Bromine.

Dr. Schumburg, chemist to the Army Medical Academy, has published in the *Deutsche Medicinische Wochenschrift* a method of rendering unwholesome water fit for drinking by the use of certain chemical agents. He says that, whilst the methods of filtering river water employed by public bodies give as a rule very good results, the domestic filtration by means of portable filters, as used in country places, is far from being satisfactory. In the course of numerous experiments he has discovered that a solution of bromine destroys all the pathogenic germs in water. When a quantity of ammonia is then added the water becomes clear and palatable; 0·2 grammes of a solution of 20 grammes of bromine and 20 grammes of bromide of potassium in 100 grammes of water will sterilise a litre of water from the River Spree. To remove the bromine a definite quantity of a 9 per cent. solution of ammonia is added. This discovery was the outcome of 200 experiments performed by Dr. Schumburg with water to which there had been added bacilli of cholera and enteric fever as well as other dejecta and a great number of saprophytes of almost every kind. Dr. Schumburg appropriately points out that a simple method of sterilising water which has to be used for drinking purposes may be very important, either on a campaign or at sea, or during the prevalence of an epidemic.

March 4th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The Autumn Manœuvres and the Red Cross.

THIS year, in the latter half of September, the "grandi manovre" will take place in the tract of country lying between the Adige and the Chiese, affluents of the Po—a tract in great part corresponding to the famous Quadrilateral, bounded by Peschiera on the north-west, by Verona on the north-east, by Legnago on the south-east, and by Mantua on the south-west. The Red Cross societies will, as usual, be represented at these manœuvres, not, however, in certain details which have been conspicuous of late years. In Piedmont, for instance, and Tuscany the mountain ambulance was a prominent feature in recent Red Cross intervention, but it will not be so certainly next September. An opportunity, on the other hand, is presented for mobilising that "Red Cross afloat," on which THE LANCET has from time to time commented. The scene of the coming manœuvres is, to say nothing of canals, rich in natural water-way—from the Lago di Garda on the north to the great artery of the Po to the south, with the intervening Chiese and Adige west and east. Italy is, I believe, unique in having a Red Cross service afloat, and her resources in this direction—if, as is more than probable, they are to be put *en évidence*—will add another to the attractions which the yearly manœuvres of her army possess for the military world.

The Government and the Appeal to the Country.

In view of the general elections, which will begin on the 21st inst., the Di Rudini Administration has issued a manifesto setting forth its political programme, domestic and foreign. It is an able document, and is already being eagerly analysed, combated, and defended by the various divisions of party. Surprise, however, is expressed, not by the Opposition only, that it ignores hygienic reform entirely. This is the more unaccountable as the Marchese di Rudini has shown a practical appreciation of Italy's backwardness in matters of public health. From his predecessors, moreover, notably from the Crispi Administration, he has

inherited what may, politically speaking, be called a "life interest" in sanitation and State medicine generally. Schemes for the minimising of contagious disease, chiefly the so-called "malattie Celtiche" (venereal disorders); for cheapening and making accessible quinine of a superior quality in malarious districts unprovided with "farmacie"; for main drainage works and improved water-supply have, *inter alia*, been bequeathed by Baccelli among preceding Ministers, and the country should see to it, now that it is on the eve of choosing its legislators, that there is no receding from the reforms already initiated and urgently required. "Sanitas sanitatum, omnia sanitas," ought to be Italy's watchword for long years to come.

Re-opening of the Universities.

The 4th inst. witnessed the re-opening of those seats of learning in which, in the judgment of their governing bodies, the resumption of class-work would not be again interrupted by agitation, political or other, or in which guarantees were forthcoming that the regular curricula would pursue a normal and tranquil course. Catania, Messina, Naples, Palermo, Pisa, Rome, and Turin are now open, like the other royal universities of Bologna, Cagliari, Genoa, Macerata, Modena, Padua, Parma, Pavia, Sassari, and Siena. Of the free, as distinguished from the royal, universities, Ferrara, Perugia, and Urbino are also open; but Camerino remains closed. All the university institutes—those of Florence, Milan, Pisa, and Pavia—have likewise been opened. The above list is a formidable one and conveys some idea of the check given to the higher or professional education by their temporary closure due to the recent riots.

An Epidemic of Charbon.

From Sant' Angelo dei Lombardi, in the Abruzzi, is reported the outbreak of charbon on a considerable scale among the oxen and milch cows. It has now assumed an epidemic form and is steadily extending to the surrounding communes. The alarm is great, not only among the cattle dealers, but among the general public, as the authorities are found to be supine in presence of the visitation. For one thing, the period of incubation of charbon in the bovine breed is by no means ascertained, and vexatious questions have arisen, and may arise again, as to who should bear the loss incurred by the death of a cow when the animal, sold as sound, dies from charbon within a few days. Nor is the spread of the epidemic an Italian question only. There is the travelling world to be considered—not likely to be attracted when the possible sale of unsound meat or diseased milk is part of the programme!

March 6th.

Obituary.

OLIVER PEMBERTON, J.P., F.R.C.S. ENG. & EDIN.

BY the death of Mr. Oliver Pemberton, which took place on the 7th inst., Birmingham has lost one of her most noteworthy citizens and the surgical profession a sturdy link with the past. Two weeks ago Mr. Pemberton was present at the General Hospital; subsequently he took cold and was laid up with an attack of bronchitis. Apparently improving from this, he developed some symptoms of intestinal obstruction, which made his family very anxious without suspecting the real cause of the danger. These symptoms became more marked, and, in spite of the assiduous attention of Mr. Bennett May and Mr. Gilbert Barling, who sought to give him relief by opening the abdomen on Sunday morning, he gradually sank and expired the same evening. The operation revealed a condition of malignant disease which art was powerless to remove or to combat. Mr. Pemberton was born in 1825, and was consequently in his seventy-second year. His father was the principal of a well-known firm of brass founders in the town. He was educated at King Edward's School under two head masters who afterwards were raised to the episcopate—namely, Jeune, afterwards Bishop of Peterborough, and Prince Lee, afterwards Bishop of Manchester, the latter of whom declared him well fitted for a literary career. But his own wishes inclined towards medicine, and accordingly he entered as a student at the Birmingham School of Medicine, studying for four years at the General Hospital as apprentice to Mr. D. W. Crompton. He then entered at St. Bartholomew's Hospital, where his life-long friendship with Savory commenced and where he was brought into close connexion with Burrows, Stanley, and Paget. In 1847 he obtained the Membership of the Royal College of Surgeons of England, and returning to Birmingham was appointed physicians' assistant to the General Hospital, and the following year resident medical and surgical officer. In 1852 he was elected surgeon to the hospital, a post he held until 1891, when he resigned upon being elected coroner for the city. In 1878 he was elected an honorary Fellow of the Royal College of Surgeons of England, and in 1885 he obtained a seat on the council of that body. In 1886, after the death of Dr. Heslop, he was appointed one of the trustees of Mason College, and afterwards became President of the council of the college. In 1891 he was appointed by the town council to be Her Majesty's coroner for the City of Birmingham. He was consulting surgeon to several local hospitals in addition to the General Hospital, where he so long laboured and to which he was ever fondly attached. His public life was also one of constant activity and energy, and as a justice of the peace for the county of Warwick he was always to the front. As a teacher of surgery at Queen's College he commanded interest and attention from his strong common sense and aptness in imparting knowledge to others. Owing to these attributes he gained a large circle of friends, who looked upon him with more than ordinary affection. Mr. Pemberton contributed to the literature of his profession in a variety of essays, the principal ones being Clinical Illustrations of Cancer, 1867; the History, Pathology, and Treatment of Melanosis, 1858; the Ingleby Lectures on Cancer of the Female Breast, 1884; Excision of the Knee-joint; Papers on Aneurysm, &c.

During his career as surgeon he was much interested in medico-legal work, and was frequently called as an expert witness in criminal trials. One notable instance was the trial of Palmer the Rugeley murderer, when Pemberton gave evidence as to the state of the spinal cord of Cook as bearing upon the question of the poison used. Besides his medical work he took the greatest interest in the affairs of his native city. He was closely associated with the Town Library, was a member of the town council from 1879 until his election as coroner, and rendered valuable service on the health and water committees. He was an admirable coroner always sympathetic and kind to witnesses, yet never failing to draw out all important points of evidence, while his directions to the jury were always clear and judicious.

Mr. Pemberton's individuality was the marked feature of his character. He was well known by his stately demeanour, his deliberate stride, and his peculiarity of dress, a wide-brimmed hat with low crown being the prominent characteristic. His knowledge of the world, his good humour, genial expression, and kindliness of manner to all with whom he came into contact formed for him attachments of a lasting kind; while his conversational powers, general robustness of character, and his ardent love of out-door life and nature gained him many admirers. As an angler his reputation was a wide one. His methodical habits and regularity of life enabled him to get through, and be beforehand with, his daily and often arduous duties with exemplary cheerfulness. In 1851 Mr. Pemberton married the only child of Mr. Daniel Whittle Harvey, M.P. for Colchester and Chief Commissioner of Police for the City of London. He leaves a widow, three daughters, and two sons.

JAMES ARTHUR JONES, J.P., M.D., C.M. GLASG.

DR. J. A. JONES of Castle Hill, Llanelly, Carmarthenshire, died on March 1st. The deceased received his medical education at the Glasgow University, graduating M.B. and C.M. in 1876, and taking the M.D. degree in 1880. Dr. Jones went to Llanelly twenty years ago and soon became extremely popular. The deceased took a great interest in municipal matters, being a member of the local board until it was merged into the present borough council, of which he became chairman three years ago. It was through the efforts of Dr. Jones that the new town hall was erected, the opening ceremony of which was performed by his wife. He was surgeon to the South Wales, Barry, and Old Lodge Tinworks and also to several collieries. Dr. Jones had been in indifferent health for some time past, and was forty-six years of age at the time of his death. He leaves a widow and three children, for whom much sympathy is felt.

Medical News.

INTER-HOSPITAL FOOTBALL.—In the final tie of the play for the Hospitals Cup (Rugby Union rules) St. Thomas's Hospital (the holders) beat Guy's Hospital by one try to nothing. The match was played at Richmond on Tuesday last, there being a large attendance of spectators, who were rewarded by witnessing an exciting game.

UNIVERSITY OF CAMBRIDGE.—Dr. S. H. Vines, F.R.S., has been appointed a governor of the Oxford High School for Boys.—A valuable collection of plants from the Pyrenees and the Alps, mounted on about 3700 sheets, made by the late Mr. Charles Packe, has been presented by his widow to the University Herbarium.—The degree of M.B. was on March 11th conferred by proxy on Mr. W. G. Richards, B.A., of Christ's College, who is now resident in India.

ROYAL HOSPITAL FOR CHILDREN AND WOMEN.—The annual meeting of the Royal Hospital for Children and Women, Waterloo-bridge-road, was held in the institution on March 4th, the Lord Mayor presiding. The committee, in their report, gratefully acknowledged the liberality of several city companies, but expressed much concern at the inadequacy of the income, which had rendered it necessary to borrow £1000 from the bankers. A special Diamond Jubilee Fund had been opened in the hope of raising £10,000.

CHARING-CROSS HOSPITAL.—A meeting in aid of the special appeal for £100,000 for Charing-cross Hospital was held at the Mansion-house on March 5th. The Lord Mayor presided and the Lady Mayoress was also present. It was stated that of the sum which it is hoped to raise £50 000 will be required to discharge present liabilities and to meet the anticipated deficiency of income during the next five years, and the remaining £50,000 will be used for new buildings which are necessary for the efficiency of the hospital.

THE PROVIDENT SURGICAL APPLIANCE SOCIETY.—The annual meeting of the Provident Surgical Appliance Society was held on Feb. 25th, at the Great Eastern Hotel, Liverpool-street, the Rev. J. Greaves presiding. The report showed that the articles distributed included 3494 elastic stockings, knee-caps, and bandages, 2911 trusses and abdominal belts, 216 artificial legs and arms, and a large number of crutches, splints, spectacles, and artificial eyes. Many air-beds and water-beds had also been lent to poor patients. The income for the year amounted to £2511, and the accounts when closed showed a balance of £130 in hand.

THE ROYAL SOUTH HANTS INFIRMARY.—At the annual meeting of this institution on the 24th ult. it was reported that 1103 in-patients and 4240 out-patients had been treated last year; the receipts had been £4898, against £4631, and the expenses £5141, against £5070. There is an actual deficit of £243. Subscriptions, donations, and collections had all increased, the Hospital Sunday Fund alone being £6 less. With respect to the renovation scheme £9300 has been subscribed, including £25 from Her Majesty the Queen, and the Mayor of the county borough has expressed his willingness to place the completion of the scheme in the forefront in this year's memorials. For this £10,000 are needed. Authority was, however, given to sell out a sum of £395 to clear the balance-sheet.

LEGACIES TO MEDICAL CHARITIES, &c.—The late Mrs. Overend of Sheffield has left legacies to relatives, friends, servants, and others to the amount of £110,000, free of duty; £26,000 are left to Sheffield charities, and Church institutions receive £4000. Other institutions benefited are: Yorkshire Deaf and Dumb Institution, £2000; Birmingham Deaf and Dumb Institution, £2000; Association in Aid of Deaf and Dumb, Oxford-street, London, £1000; Children's Hospital, and Women's Hospital, Birmingham, £1000 each; St. Mary's Hospital, London, £1000; Worksop Dispensary, £1000; Cottage Hospital, Retford, £1000; Northern Counties Asylum for Idiots and Imbeciles, £1000; and National Hospital for Paralysed and Epileptic, £5000. To the following medical charities are left £4000 each: Cancer Hospital, Fulham-road, and Queen Charlotte's Lying-in Hospital; and to the Devonshire Hospital, Buxton, £500. Many other institutions have also benefited.

THE Worshipful Company of Clothworkers have sent a donation of £100 to the Royal Hospital for Diseases of the Chest, City-road, E.C.

ROYAL METEOROLOGICAL SOCIETY.—A special exhibition of Meteorological Instruments in use in 1837 and in 1897 has been arranged in commemoration of the Diamond Jubilee of Her Majesty the Queen, at the Institution of Civil Engineers, Great George-street, Westminster. The exhibition will be open from Tuesday, March 16th, to Friday, March 19th. On Wednesday, the 17th, at 7.30 P.M., an illustrated lecture will be given by Mr. G. J Symons, F.R.S., on "Meteorological Observations in 1837 and 1897."

THE DIFFUSION OF SMALL-POX.—Since mid-February to Saturday last 10 deaths from small-pox had been registered in London, of which 6 were registered last week, 3 in vaccinated and 3 in unvaccinated persons. The 3 vaccinated individuals were all over five years of age, 2 of them being upwards of forty years of age; whilst of the 3 unvaccinated all were aged under twenty years, and 1 was a child under the age of five years. Of the 6 deaths, 3 patients belonged to Camberwell, 2 to the Strand, and 1 to St. Martin-in-the-Fields sanitary areas. Six new cases were last week admitted to the hospital ships on the Thames, as compared with 20, 3, and 18 in the preceding three weeks, and 43 cases remained under treatment last Saturday. Two cases of the disease which occurred at Devonport towards the close of last month, both in one household, were isolated in the infectious diseases hospital at Milehouse.

DIPHTHERIA IN LONDON.—Last week saw a fall in the number of deaths registered from diphtheria in London, the total of 43 being the third lowest for any week during the current year. It was, however, 9 in excess of the corrected average for the ninth week of the period 1887-96. All but one of the 43 deaths were in young persons aged under twenty years, and 25 were of children aged from one to five years. Wandsworth and Camberwell were each of them credited with 6 deaths, Greenwich with 5, and Islington with 4 deaths. The admissions to hospital in the week numbered 112, against 104, 104, and 102 in the preceding three weeks, and last Saturday found 846 patients who were suffering from diphtheria under isolation. In the outer ring there were 9 deaths registered from the disease, of which 5 were in the West Ham registration district and 3 in the Brentford district.

CARDIFF UNIVERSITY.—The Medical Students' Club of Cardiff University College entertained Professor Alfred William Hughes at dinner in the Queen's Hotel, Cardiff, on Monday evening, and presented that gentleman with a token of goodwill and esteem on his departure after having resigned the chair of anatomy. The toast of "The Health of Professor Hughes" was proposed by Dr. Donald Rose Paterson, the President of the College, who referred at length to the good influence Professor Hughes had exercised upon the success of the medical school during his four years' stay in Cardiff and emphasised the regret which all the teachers and students experienced in parting with him. Professor Hughes was then presented with a handsome spirit-stand and a silver salver, on which was inscribed a sentence conveying the regard of the students for him "as professor and friend." Professor Hughes, who had been forced to leave Cardiff on account of the health of his wife, acknowledged the compliments he had received in feeling terms.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Petroleum Lamp Accidents.

THE Select Committee of the House of Commons on this subject has appointed Mr. Mundella chairman, and has determined to take no more evidence from scientific experts as to the relative inflammability of different kinds of oil, but to push forward its inquiry as to lamps and their construction.

Proposed Conference on Insanity.

Mr. William Corbet has given the following notice of motion—viz.: To call attention to the annually increasing numbers of the insane not only in the United Kingdom, but in every civilised country of the world; and to move that it is desirable in the interests of humanity that steps shall be taken to convene an international conference to inquire

into the cause of such increase and to report whether any and what measures can be adopted to arrest the spread of the disease.

Military Head-dress.

In the House of Lords on Monday, March 8th, the Earl of Strafford questioned the War Secretary with reference to the head-dress of the Army and the various proposals for changing it, and the Marquis of Lansdowne replied that he has thought it right to refer the whole question to a committee, and that until the report of this committee is received no decision will be arrived at by the War Office.

Infant Life Protection.

A Bill is now before the House of Lords to amend the law for the better protection of infant life. It was introduced by the Earl of Denbigh.

Working Men's Dwellings Bill.

The House of Lords has given a second reading to a Bill to provide facilities for the acquisition by working men of their own dwellings. The Bill enables local authorities to make advances up to £150, and requires that they shall be satisfied that the workman actually resides or *bonâ fide* intends to reside in the dwelling-house, that the title is good, the sale made in good faith, and the price reasonable, and that the dwelling-house is in a sanitary and tenantable condition. There are a great many provisions in the Bill designed evidently to secure the local authorities against loss and to prevent abuse.

HOUSE OF COMMONS.

THURSDAY, MARCH 4TH.

Metropolitan Pauper Children.

Mr. Cohen asked the President of the Local Government Board if he would lay upon the table of the House the answers he had received from the guardians of the various metropolitan parishes to the draft order prepared by the Local Government Board for placing certain classes of children under the care of a new central authority in London.—Mr. Chaplin replied that in a large proportion of the communications he had received he was asked to defer a decision until a conference was held on the subject. This conference was held on the 26th ultimo, and resolutions were passed by large majorities to the effect (1) that it was desirable that separate provision such as was indicated in the draft order should be made for certain classes of children, and (2) that it should be urged upon the Local Government Board before constituting a new board to consider whether the duties created by the new order might not with advantage be conferred on some existing authority or authorities. At the conference referred to every board of guardians and the managers of each district school in the metropolis were represented by delegates, and he had received no communication from any board of guardians on the subject since the conference took place.—Mr. Lough asked Mr. Chaplin whether he would consider favourably the recommendation to reconsider the decision to constitute a new authority rather than give the work over to one of the existing authorities.—Mr. Chaplin replied that the whole matter was under consideration.

Increase of Enteric Fever in India.

Lord George Hamilton, replying to a question addressed to him by General Russell, said he had noticed with regret the increase of enteric fever in India, the causes of which were still very obscure. The Government of India had adopted various measures for improving the sanitation and water-supply of cantonments, and the question as to the means of checking this disease was one which was constantly engaging their attention.

Rabies.

Mr. Walter Long, President of the Board of Agriculture, in answer to a question on this subject put to him by Mr. Stephens, said:—The new orders which I have it in contemplation to make with regard to rabies will be issued with the least possible delay, but I would point out that those orders are intended to give effect to the recommendation of the Departmental Committee that a determined and systematic attempt should be made to stamp out rabies, not only in the metropolitan area, but throughout the United Kingdom. The adoption of this policy involves the settlement of several difficult questions, which are now engaging my active consideration, but in any event adequate notice of the new requirements must be given to the public before they can take effect. In these circumstances I have suggested for the consideration of the Middlesex County Council whether the most convenient course to be taken by them during the interim would not be that their regulations should be brought into harmony with those now in force in the other districts comprised within the metropolitan area.

MONDAY, MARCH 8TH.

Private Asylums.

Mr. Field asked the Home Secretary whether the Government would consider the advisability of the suppression of private asylums, and make other and more suitable provision for paying patients.—Sir Matthew White Ridley replied that he was not aware of any sufficient reason for disturbing the arrangement made only six years ago by Parliament with regard to licensed houses.

Suicides.

Sir Matthew White Ridley, in reply to Mr. William Corbet, said he was not aware that any useful purpose would be served by continuing the return as to the insane who committed suicide which was granted last year, and as it proved a very troublesome one to prepare he was afraid he must decline to do it. The number of insane persons generally who committed suicide would, of course, appear in the judicial statistics in the ordinary way.

TUESDAY, MARCH 9TH.

Health of Cotton Cloth Workers.

Mr. Ascroft asked the Secretary of State for the Home Department if he would consider the advisability of introducing a Bill, at as early a date as possible, with a view to carrying out the recommendations made by the committee appointed to inquire into the working of the Cotton Cloth Factories Act, 1889, &c., for the preservation of the health of the workpeople employed in the textile industries, or whether the Government would be prepared to support such a Bill if introduced by a private Member.—Sir Matthew White Ridley replied that there had not been sufficient time as yet for the full and proper consideration of the committee's recommendations, but they were being carefully considered at the present moment, and of course he should be glad to consider at the same time any suggestions which Members might desire to make.

Work in Bakehouses.

At this sitting of the House Mr. Woods introduced a Bill to restrict the hours of labour in bakehouses to forty-eight per week.

Metropolitan Pauper Children.

Mr. Pickersgill asked the President of the Local Government Board to postpone the final issue of the order with reference to the metropolitan Poor-law schools until the House had been enabled to consider the matter either on the vote for the Local Government Board or on some other occasion.—Mr. T. W. Russell, on behalf of Mr. Chaplin, declined the proposal.—Mr. Pickersgill in this connexion has given notice of a motion deprecating the formation of the proposed Metropolitan Children's Asylum Board, on the ground mainly that it will add to the confusion of authorities and to the cost of administration.

WEDNESDAY, MARCH 10TH.

Private Lunatic Asylums in Ireland.

On the motion of Mr. Field, there was ordered a return of the number of cases treated in private lunatic asylums in Ireland, the number of cures effected, and the amount of revenue derived from patients during the years 1895, 1896, and 1897.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

ASHDOWNE, W. C. G., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Anæsthetist to St. Mary's Hospital, London.

BARNES, GEORGE, M.R.C.S., L.R.C.P. Ed., has been re-appointed Medical Officer of Health for the Chard Urban District.

BARROW, GEO. A., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer to the Out-patient Department of the Children's Hospital, Manchester.

BRISCOE, WILLIAM THOMAS, M.D., M.Ch. Dubl., has been re-appointed Medical Officer of Health by the Chippenham Urban District.

BROADBENT, J. F. H., M.D. Oxon., B.Ch., M.R.C.P. Lond., M.R.C.S., has been appointed Casualty Physician to St. Mary's Hospital, London.

BROWNE, CHAS. WM., M.R.C.S. Eng., L.S.A., has been appointed Additional District Surgeon of Aliwal North, resident at James Town, vice Kitching, resigned.

CHRISTOPHERSON, J. B., M.B. Camb., L.R.C.P. Lond., M.R.C.S., has been appointed Resident Medical Officer to the Evelina Hospital for Children, London.

COLLIER, H. S., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Surgeon in Charge of Out-patients to St. Mary's Hospital, London.

CONNELL, ARTHUR M., L.R.C.P. Lond., M.R.C.S., has been appointed House Physician to the Sheffield General Infirmary, vice Rutherford, resigned.

DAWSON, W. J. O., L.D.S.R.C.S. Eng., has been appointed Dental Surgeon to the Incorporation of Southampton.

DUNN, L. A., F.R.C.S., M.S., Assistant Surgeon, Guy's Hospital; Surgeon, East London Children's Hospital, Shadwell, has been appointed a Consulting Surgeon to the St. Mary's Children's Hospital, Plaistow.

FAGGE, R. H., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed House Surgeon to the Leicester Infirmary, vice M. B. Foster, resigned.

FARNFIELD, W. W., M.R.C.S., L.R.C.P., has been appointed Resident Medical Officer to St. Mary's Children's Hospital, Plaistow.

FLOWER, FREDERICK I., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for Warminster.

GANGE, F. A., M.D. St. And., M.R.C.S., has been re-appointed Medical Officer of Health by the Faversham Rural District Council.

GARNER, W. L., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon to the Children's Hospital, Nottingham.

HAINS, L. J. CARY, J.P., L.R.C.P. & S. Edin., has been re-appointed Medical Officer for the Harberton District of the Totnes Union.

HARRIS, W. J., M.B., B.C. Camb., M.R.C.P. Lond., has been appointed Junior Medical Tutor to St. Mary's Hospital Medical School, London.

HERBERT, B. H., M.R.C.S., has been re-appointed Medical Officer of Health by the Uttoxeter Urban and Rural District Councils.

HUGHES, T. H., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health by the Connah's Quay Urban District Council.

HUNTER, W. L., M.D., B.Ch. Dubl., D.P.H. Eng., has been re-appointed Medical Officer of Health by the Pudley District Council.

ISACKE, M. W. S., L.R.C.P. Lond., M.R.C.S., has been appointed Third Assistant Medical Officer to the Wadsley Asylum by the West Riding County Council.

JONES, DAVID, M.R.C.S., L.R.C.P. Ed., has been re-appointed Medical Officer of Health for the Kidwelly (Carmarthenshire), Urban District.

LAWRENCE, A. E. AUST, M.D., C.M. Aberd., has been appointed Honorary Consulting Physician Accoucheur to the Bristol General Hospital.

LITTLETON, P. R., M.R.C.S., has been re-appointed Medical Officer of Health for the Ashbourne Urban District.

LOWE, P. R., L.S.A., has been appointed House Physician to the Leicester Infirmary, vice R. H. Fagge.

MACAULEY, W. G. R., L.S.A., has been appointed Medical Officer for the Western Sanitary District of the Freebridge Lynn Union, vice F. A. Barrington.

MACKINTOSH, ANGUS, M.D. Glasg., L.F.P.S., has been re-appointed Medical Officer of Health by the Clay Cross Urban District Council.

MORRISON, JAS., M.D. Lond., L.R.C.P., M.R.C.S., has been appointed Physician to the Farringdon General Dispensary, London.

NEWNHAM, W. H. C., M.A., M.B. Cantab., M.R.C.S., has been appointed Physician Accoucheur to the Bristol General Hospital.

PIPER, F. P., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Claybury Asylum.

POPE, G. STEVENS, L.R.C.P. & S. Edin., Assistant Medical Officer, Cane Hill Asylum, has been appointed Medical Superintendent of the New Middlesbrough Asylum, Marton, Yorkshire.

POYNDER, F. C., M.B., B.Ch. Oxon., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon to the West London Hospital.

POYNTON, F. J., M.B., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Registrar to St. Mary's Hospital, London.

PROSSER, THOMAS GILBERT, J.P., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for the Monmouth Urban District.

RANDALL, ERNEST B., M.D. Lond., M.R.C.S. Eng., has been appointed Honorary Medical Officer to St. Mary's Children's Hospital, Plaistow.

RAYNER, D. C., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Assistant Physician Accoucheur to the Bristol General Hospital.

ROBINSON, H. B., F.R.C.S., M.D. Lond., M.S., Assistant Surgeon, St. Thomas's Hospital, and East London Children's Hospital, Shadwell, has been appointed a Consulting Surgeon to the St. Mary's Children's Hospital.

SCOTT, A. WM., M.D. Brux., M.R.C.S., has been re-appointed Medical Officer of Health for the Handsworth Urban District.

STEPHENS, J. W. W., M.B., B.C., D.P.H. Camb., has been appointed Assistant Bacteriologist to the Government in India.

TUXFORD, ARTHUR, M.D. Edin., Medical Officer of Health to the Boston Urban and Port Sanitary Authorities and Sibsey Rural District Council, has been appointed Medical Officer of Health to the Rural District Council, Boston Union, vice J. Wilkinson, resigned; and also re-appointed Medical Officer by the same Council to the Fever Hospital, Boston.

VENIS, H. C., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed House Surgeon to the Brecknock County and Borough Infirmary.

VINTER, S. G., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Union House, and Medical Officer and Public Vaccinator for the No. 2 Sanitary District of the St. German's Union.

WARE, ERNEST E., M.D. Lond., B.S., M.R.C.S., has been appointed Honorary Medical Officer to St. Mary's Children's Hospital, Plaistow.

WELLS, R. STOTHART, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Parish of Kilmuir, Skye.

WILLIAMS, C. W., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Smallburgh Sanitary District and the Workhouse of the Smallburgh Union.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BOOTLE BOROUGH ASYLUM.—Junior House Surgeon. Salary £40 per annum, with board, lodging, washing, &c.

BOROUGH HOSPITAL, Birkenhead.—Junior House Surgeon. Salary £60 per annum, with board, lodging, and washing, but no wine, spirits, or beer.

BRACEBRIDGE PAUPER LUNATIC ASYLUM, Lincoln.—Junior Assistant Medical Officer, unmarried. Salary £125 a year with board, apartments, attendance, and washing. Also Assistant Medical Officer. Salary £150 per annum, with board, apartments, attendance, and washing.

BRADFORD INFIRMARY.—Dispensary Surgeon, unmarried. Salary £100 per annum, with board and residence.

DERBYSHIRE ROYAL INFIRMARY, Derby.—Honorary Surgeon.

DUNDEE ROYAL INFIRMARY.—Resident Clinical Assistant. Board, lodging, and washing provided.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark-bridge-road, S.E.—Junior Resident Medical Officer. Salary £50. Also four qualified Clinical Assistants and eight unqualified Clinical Clerks in the Out-patient Department.

GENERAL HOSPITAL, Birmingham.—Surgical Casualty Officer for one year. Salary £50 per annum, non-resident.

GENERAL HOSPITAL, Nottingham.—Assistant House Surgeon for six months. Board, lodging, and washing in the hospital provided.

GENERAL INFIRMARY AT LEEDS.—Qualified Casualty Officer. Salary £100 a year, with board, lodging, and washing.

GRAVESEND HOSPITAL.—House Surgeon. Salary £80 per annum, with board and residence.

HANTS COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £100 per annum, increasing to £125 after twelve months' service, with furnished apartments, board, washing, and attendance. Applications to the Committee of Visitors, Knowle, Fareham.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians.

KENSINGTON AND CHELSEA SCHOOL DISTRICT.—Medical Officer (non-resident) at the Cottage Home School at Banstead, near Epsom, Surrey. Salary £140, rising £10 every two years to a maximum of £180 per annum, subject to the statutory percentage deduction under the Poor-law Officers Superannuation Act, 1896. Applications to the Clerk to the Managers, Guardians' Offices, Marloes-road, Kensington, W.

LEICESTER INFIRMARY.—Assistant House Surgeon for twelve months. An honorarium of £42, and board, residence at the Infirmary, and washing provided.

LONDON LOCK HOSPITAL, 91, Dean-street, W.—House Surgeon to the Male Hospital. Salary £50 per annum, with board, lodging, and washing. Applications to the Secretary at Harrow-road.

LONDON SCHOOL OF MEDICINE FOR WOMEN, 30, Handel-street, Brunswick-square, W.C.—Demonstrator of Physiology. Salary £30 per annum.

MANCHESTER AND SOUTHERN MATERNITY HOSPITAL.—Resident House Surgeon. Honorarium at the rate of £50 per annum and board.

MANCHESTER ROYAL EYE HOSPITAL.—House Surgeon. Salary £70 per annum, with residence, board, and washing.

MONTROSE ROYAL LUNATIC ASYLUM.—Physician Superintendent for one year. Salary £700 per annum, with free house, fire, and light.

NEWPORT AND MONMOUTHSHIRE HOSPITAL, Newport, Mon.—House Surgeon. Salary £100 per annum, with board and residence (no stimulants provided).

POPLAR HOSPITAL FOR ACCIDENTS, East India-road, Poplar, E.—Salary £50 a year, with board and residence. Also second Assistant House Surgeon. Salary £50 a year, with board and residence.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, London.—Assistant Resident Medical Officer for four months. Salary at the rate of £50 per annum, with board and residence.

ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road, Brighton.—House Surgeon. Salary £30 per annum, with board, lodging, and washing. No stimulants.

ROYAL HOSPITAL FOR SICK CHILDREN, Glasgow.—House Physician. Salary £50, with board and lodging.

ROYAL LONDON OPHTHALMIC HOSPITAL, Moorfields.—Senior House Surgeon.

ROYAL SOUTH HANTS INFIRMARY, Southampton.—Assistant Physician.

ST. LUKE'S HOSPITAL, LONDON, S.E.—Clinical Assistant for six months. Board and residence provided.

ST. SAVIOUR'S UNION, Surrey.—Medical Superintendent and Second Assistant Medical Officer at the Infirmary, East Dulwich-grove, S.E. The salary of the Medical Superintendent at the rate of £400 per annum, with unfurnished house, coals, gas, and water, and that of the Second Assistant Medical Officer at the rate of £80 per annum, with furnished apartments, board, and washing. Subject to an annual percentage deduction from the salaries in accordance with the provisions of the Poor-law Officers Superannuation Act. Applications to the Clerk, Union Offices, John-street, Blackfriars-road, S.E.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—Assistant House Surgeon for six months. Honorarium £10, with board and residence.

SUSSEX COUNTY HOSPITAL, Brighton.—House Physician, unmarried. Salary commencing at £50 per annum, with board and residence and washing in the Hospital.

UNIVERSITY COLLEGE, BRISTOL, FACULTY OF MEDICINE.—Medical Tutor, Stipend £125 per annum

VICTORIA HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Edinburgh.—Resident Physician. Board and lodging are provided, and an allowance for conveyance at the rate of £24 per annum. Also non-resident Medical Officer for Out-patients. Salary at the rate of £60 per annum. The appointments for six months. Applications to Messrs. Wallace and Guthrie, W.S., 1, North Charlotte-street, Edinburgh, Hon. Secs.

WESTERN GENERAL DISPENSARY, Marylebone-road, London.—House Surgeon, unmarried. Salary £60 a year, with board and residence.

WOLVERHAMPTON EYE INFIRMARY.—House Surgeon, for twelve months. Salary £60 per annum, with rooms, board, and washing.

Births, Marriages, and Deaths.

BIRTHS.

ADAMS.—On March 8th, at Newbury, the wife of Alfred Adams, M.B., B.Ch. Oxon., of a son.

BONAR.—On Feb. 28th, at Via del Babuino, Rome, the wife of Thomson Bonar, M.D., of a son.

FITZMAURICE.—On March 9th, at Lindfield, Haywards-heath, Sussex, the wife of Richard Fitzmaurice, District Medical Officer, of a daughter.

LATIMER.—On Feb. 28th, at St. Helen's-road, Swansea, the wife of H. A. Latimer, M.D., of a son.

MCBRIDE.—On March 7th, at The White House, Great Berkhamsted, the wife of J. Best McBride, L.R.C.P., L.R.C.S.I., of a daughter.

NIAS.—On March 8th, at Rosary-gardens, South Kensington, the wife of J. B. Nias, M.D., of a daughter.

RICHARDS.—On Feb. 27th, at Aber Arran, Dolgelly, the wife of R. W. Richards, M.D., L.R.C.P., of a son.

TAYLOR.—On March 7th, at Seymour-street, Portman-square, W., the wife of Seymour Taylor, M.D., of a son.

MARRIAGE.

MORRIS—MONRO.—On March 1st, at St. George's Church, Ramsgate, E. H. Grant Morris, B.A., M.B. Cantab., eldest son of Christopher Morris, of Baron's Craig, Dalbeattie, N.B., to Catherine Mary, only daughter of the late C. E. Monro, L.R.C.P., M.R.C.S., of Ramsgate.

DEATHS.

BARRON.—On March 10th, at his residence, Summerseat, Southport, George Bretherton Barron, in his 76th year.

DICKINSON.—On March 3rd, at his residence, Denmark Villas, Hove, Thomas Dickinson, M.R.C.S. L.S.A., formerly of Sloane-street, Chelsea, aged 67.

PEMBERTON.—On March 7th, at his residence, the Quarry House, Over Whitacre, Warwickshire, Oliver Pemberton, F.R.C.S., J.P., Coroner for the City of Birmingham, in his 72nd year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), Westminster (2 P.M.).

TUESDAY (16th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (2 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.).

WEDNESDAY (17th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.).

THURSDAY (18th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.)

FRIDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.).

SATURDAY (20th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (16th).—PATHOLOGICAL SOCIETY OF LONDON.—8.30 P.M. Mr. S. G. Shattock: "Sabie Intestinal."—Mr. A. A. Bowlby: Unusual Specimen of Gummatous Disease of the Kidney.—Mr. D'Arcy Power: Some Points in the Minute Anatomy of Intussusception.—Mr. J. H. Targett: Giant celled Tumours of the Integuments.—Dr. Champneys and Mr. Power: Congenital Occlusion of the Duodenum by complete Transverse Septum.

WEDNESDAY (17th).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Papers:—Mr. J. L. Williams: On the Formation and Structure of Dental Enamel.—Dr. A. E. Wright: On a New Method of Measuring and Counting Microscopic Objects.

THURSDAY (18th).—SOCIETY OF ANÆSTHETISTS (20, Hanover-square, W.).—8 30 P.M. Casual Communication:—Prof. Holiday: An Anæsthetic Inhaler. Paper:—Dr. Silk: The Occurrence of Pneumonic Troubles after the Administration of Anæsthetics.

FRIDAY (19th).—EPIDEMIOLOGICAL SOCIETY OF LONDON (11, Chandos-st., Cavendish-sq.).—8 P.M. Dr. J. Niven: The Prevention of Tuberculosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (15th).—ROYAL COLLEGE OF SURGEONS.—5 P.M. Prof. C. Stewart: Joints and Flexible Bonds of Union in Plants and Animals.
THE SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—8 P.M. Dr. A. Hill: Diseases of Animals in Relation to Meat Supply; Characteristics of Vegetables, Fish, &c, unfit for food.
SOCIETY OF ARTS.—4.30 P.M. Prof. W. C. Roberts-Austen,: Alloys. (Cantor Lecture.)

TUESDAY (16th).—ROYAL COLLEGE OF PHYSICIANS.—5 P.M. Dr. W. Collingridge: On Quarantine. (Milroy Lecture.)
LONDON POST-GRADUATE COURSE.—Bethlem Hospital, 2 P.M., Dr. Craig: Alcoholic Insanity, Insanity with Syphilis, Insanity with Organic Brain Disease.—Hospital for Skin Diseases, Blackfriars, 4.30 P.M., Dr. Payne: Impetigo.
CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.—4 P.M. Dr. D. Grant: The Diagnosis and Treatment of Visible Abnormalities in the Auricle and External Meatus.
NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Bloomsbury).—3.30 P.M. Mr. Horsley: Lecture.
WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM (73, Welbeck-street).—4 P.M. Dr. F. Beach: On Cases of Mental Deficiency in Children.
ROYAL INSTITUTION.—3 P.M. Prof. A. D. Waller: Animal Electricity.

WEDNESDAY (17th).—ROYAL COLLEGE OF SURGEONS.—5 P.M. Prof. C. stewart: Joints and Flexible Bonds of Union in Plants and Animals.
LONDON POST-GRADUATE COURSE.—Parkes Museum, Margaret-street, W., 4.30 P.M., Prof. A. Wynter Blyth: Sanitary Appliances
HOSPITAL FOR CONSUMPTION, &C., (Brompton).—4 P.M. Dr. Maguire: The Cardiac Affections of Renal Disease.
THE SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—3 P.M. Mr. F. Ruddle (conducted by): Inspection and Demonstration at L.C.C. Common Lodging House, Parker-street, Drury-lane (number limited).
WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—5 P.M. Dr. Whitfield: Medical Cases.
NORTH-WEST LONDON CLINICAL SOCIETY (North-West London Hospital).—8.30 P.M. Exhibition of Clinical Cases.

THURSDAY (18th).—ROYAL COLLEGE OF PHYSICIANS.—5 P.M. Dr. W. Collingridge: On Quarantine. (Milroy Lecture.)
THE SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—8 P.M. Mr. H. R. Kenwood: Infectious Diseases and Methods of Disinfection.
THE HOSPITAL FOR SICK CHILDREN (Medical School, Gt. Ormond-street, W.C.).—4 P.M. Mr. J. H. Morgan: Clinical Lecture (Surgical).

FRIDAY (19th).—ROYAL COLLEGE OF SURGEONS.—5 P.M. Prof. C. Stewart: Joints and Flexible Bonds of Union in Plants and Animals.
LONDON POST-GRADUATE COURSE.—King's College, 3 to 5 P.M., Prof. Crookshank: Actinomycosis and Glanders.
NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Bloomsbury).—3.30 P.M. Mr. Ballance: Lecture.
ROYAL INSTITUTION.—9 P.M. Sir E. M. Thompson: Greek and Latin Palæography.

SATURDAY (20th).—ROYAL INSTITUTION.—3 P.M. Right Hon. Lord Rayleigh: Electricity and Electrical Vibrations.
THE SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—3 P.M. Mr. E. J. Reynolds: Inspection and Demonstration at Friern Barnet Sewage Works.

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND, WHEN ACCOMPANIED BY BLOCKS, IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index for the second volume of 1896 was given in the issue of Dec. 26th last. The practice of supplying loose copies has been discontinued, the Index having been placed in the centre of the journal, whence it can easily be detached, and placed either at the beginning or at the end of the volume.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1896 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.* (Local bookbinders will charge about 1*s.* for binding the numbers in these cases.)

To be obtained on application to the Manager, accompanied by remittance.

THE COST OF A COTTAGE HOSPITAL.

To the Editors of THE LANCET.

SIRS,—Being anxious to start a cottage hospital I should be very grateful if you or any of your readers would kindly give me some idea as to the cost of furnishing one of, say, seven or eight beds, also the cost of maintenance per bed per annum (instruments and splints not to be included). Apologising for troubling you,

I am, Sirs, yours faithfully,

March 2nd, 1897. ONE WHO WANTS TO KNOW.

THE DOSE OF IPECACUANHA.

To the Editors of THE LANCET.

SIRS,—One of the commonest diseases in this country is bronchitis. The disease by which more persons are killed than by any other disease is bronchitis. This is the time of the year when bronchitis is especially common, and when it kills an especial number of persons. The remedy par excellence for bronchitis is ipecacuanha. Other remedies there are, but the one in most frequent use is ipecacuanha. It may be an interesting inquiry to make at about this time whether patients affected with bronchitis are as a rule much benefited by having ipecacuanha prescribed for them. I venture to think that, as a rule, they are not much, if, indeed, at all, the better for it. Affected myself with bronchitis, and ipecacuanha wine being recommended for me, I ascertained the authoritative customary dose of this remedy from the pharmacopœias of some of the London hospitals. I find that the dose commonly administered is ten minims three times a day. Now, I have reason to suppose that in that dose ipecacuanha wine is of little, if any, use. I find that if I take half a drachm of it every two hours throughout the day it produces no apparent effect of any kind, no action of the skin, no nausea, no aperient result, no tangible expectorant effect. The wine was procured from Messrs. J. Bell and Co., and was therefore of the best quality. I have yesterday thus taken in all three drachms of ipecacuanha wine in place of the customary total of thirty minims, and this morning before noon I have taken one and a half drachms. The impression left on my mind is that I have taken far too little to produce any effect of any kind. I am therefore of opinion that the customary dose of this remedy ought to be largely increased and that such a step may be taken with perfect safety.

I am, Sirs, obediently yours,

Weymouth-street, W., Feb. 11th, 1897. BALMANNO SQUIRE.

Mr. H. G. Rogerson.—The advertisements are of the ordinary character, though perhaps more impudent than usual. We should have thought the schoolmaster might have been called to order by his employers.

Junior Practitioner.—There is no objection to such a course, provided there is no canvassing for patients.

VEGETABLE PILLS.

THE *Birmingham Mail* is responsible for the following excellent story of "the experience of a Birmingham man who purchased a box of pills from a local huckster's shop. He took some without effect. The rest were set aside in a cupboard which was very damp. After a few weeks he again sought his pills and to his astonishment each had developed a healthy green shoot, which was not rhubarb or aloes, but grew from what turned out to be a white pea covered with some white coating." We have no doubt that the Birmingham man was sore at being gulled. In our opinion he ought to be most devoutly thankful that nothing more than a harmless pea was foisted on him in exchange for his silver.

Dr. Albert Wilson of Leytonstone writes to us concerning a case of dual consciousness exhibited by him at the Clinical Society (THE LANCET, March 6th, 1897, p. 665). He writes to repudiate any connexion with the publicity given to the case and his name by a lay paper, and at the same time to invite any interested medical man to communicate with him if they should desire an interview with the patient.

"FALSE COLOURS."

To the Editors of THE LANCET.

A Disclaimer.

SIRS,—Your annotation on the *primâ facie* facts recited was intended to be just. You very fairly inferred an inconsistency between my letter and my appearance on a public platform with posters staring me in the face—M.D., &c. But this appearance is fallacious, for at the stated time and for many weeks, I was confined to a sick bed with an injured leg and neither supported the chairman (since I could not support myself) nor even knew or heard of the bills and posters which have elicited your correspondent's comment. Further (and how can I say what I wish without the appearance of arrogance or presumption?), while it may be right to show in some way that I have had a medical education, I am not desirous of appearing in any degree connected with the British medical school and Register. I say this without offence and without judging any other man's principle. But I stick to my own. I am myself convinced that the orthodox antagonistic principle of medication is a mistake, that vaccination is a blunder, and vivisection a crime. Therefore your correspondent will understand that I am sincere when I repudiate, as I have sometimes to do on the platform or elsewhere, the title of "doctor," indicating, as it is supposed to do, an orthodox, registered medical practitioner of Great Britain. These are my colours, and I am neither ashamed of them on the one hand nor flaunt them in anyone's face on the other. Another point, but one on which I shall not enlarge, is that all letters after one's name and all titles put before it should, I think, carry with them some definite idea of examinations passed and merit won, but not otherwise.

I am, Sirs, yours faithfully,

Temple, March 8th, 1897. H. S. SCHULTESS-YOUNG.

"ANTISEPTIC MIDWIFERY."

To the Editors of THE LANCET.

SIRS,—I have, I am afraid, failed to make myself properly understood. What I meant to convey was that the experience of lying-in hospitals seems conclusively to point to the perchloride solution as the only reliable antiseptic for purifying the hands, &c., but that a strength of 1 in 2000, as quoted by Mr. Harding from an old edition of my book on midwifery, is not sufficiently strong, and that 1 in 1000 should be used. Every practical man knows that nurses will not use 1 in 50 carbolic solution effectively because of its roughening and irritating effect on the hands. The creoline solution I do not recommend as a means of disinfecting the hands—for which purpose the 1 in 1000 perchloride alone should be employed—but for addition to water used for douches or ablution after delivery. It is perfectly bland and unirritating. Sufficient creoline should be dropped into the water to be used to make it milky in appearance.

I am, Sirs, yours truly,

Grosvenor-street, W., March 5th, 1897. W. S. PLAYFAIR.

Partner.—A medical man cannot take as a partner anyone but a properly qualified person. Anyone finding capital for the purchase or conduct of a business is not a partner with the man who works the business. It is a mere matter of contract how such a capitalist should be repaid. He or she would have no control over the working of the practice, which must be left strictly to medical hands.

TREATMENT OF CORNS, &c.

A CORRESPONDENT writes:—"Can any of your readers suggest good treatment for corns and bunions? I have used salicylic preparations to corns which decrease them temporarily, but they return. As to bunions, I want a method of reducing pain, easily applicable and, if possible, to reduce size. I have had a run of patients who expect a medical practitioner to cure all minor ills."

D'Artagnan.—We have seen the article. No good would come of commenting upon it.

"LINCOLN MEDICAL PROTECTION FUND."

To the Editors of THE LANCET.

SIRS,—Will you kindly publish the accompanying statement of accounts of the above fund? Since the last published list I have received the following subscription—T. M. King, M.A., 4, Mortlake-road, Kew, £1.

I am, Sirs, yours truly,

Lincoln, March 8th, 1897. W. A. CARLINE.

LINCOLN MEDICAL PROTECTION FUND.

Receipts.	£	*s.*	*d.*
From 282 subscribers	381	17	0
Bank interest		16	0
	382	13	0

Payments.	£	*s.*	*d.*
Printing, addressing, and postage of appeals (8000) ...	35	14	0
Rent of house for Provident Medical Association ...	17	10	9
Printing rules and cards and cost of drugs for same	7	5	2
Rents and taxes for same	1	19	1
Sundry expenses	1	4	6
Rent of extra (furnished) house four weeks	7	0	0
Treasurer's postage, &c.	1	8	0
Medical officers, including payments for removal of their furniture—Mr. Johnston	122	0	7
Mr. Whitwell	99	3	3
Dr. McDade	89	9	8
	£382	13	0

(Signed) GEO. MITCHINSON, CHARLES BROOK, C. HARRISON, } Trustees.
W. A. CARLINE, Hon. Treasurer.

Alpha.—The answer to this question clearly depends upon our correspondent's business position towards A. If he is A's employé he must do as he is told or resign his position; if he is not an employé he can act on his own responsibility.

AN INSOLENT ADVERTISEMENT.

MR. FRANK HOWARD, who describes himself as a "consulting ophthalmic optician," has issued a circular in which he offers to medical men the use of a dark room and all necessary testing apparatus for examining a patient. We have no fault to find with this offer, which might be of service to some practitioners, but Mr. Howard then goes on to say, "If you kindly send to me any patient whose errors of refraction or accommodation require correction, I should be glad to diagnose the case and submit my prescription to you for verification and approval, free of charge." This last offer is simply a piece of impertinence, and we hope that any medical man who has received Mr. Howard's circular will write telling him to mind his own business—namely, that of supplying glasses ground to a certain curvature in accordance with the formula laid down by a medical man.

SOLUTION OF CHLORINE AS A GERMICIDE.

To the Editors of THE LANCET.

SIRS,—In the early part of October of last year I thought of trying the result of the application of the old liquor chlori to some long-standing cases of varicose, indolent, and purulent ulcers, lupus, rodent and epithelial sores, and syphilis, and so happy is the result in many of these cases that I determined to investigate the matter further and had the liquor made purposely of different strengths of pure chlorine passed into sterilised water. I firmly believe we have in this liquor one of the most powerful germicides and antiseptics of the time. Towards the close of last year, through the kindness of Mr. George Stoker, I had the opportunity of seeing his interesting and successful cases under the oxygen treatment, and it confirmed my view that we wanted a more destructive germ-destroying element as well as a blood purifier and coagulator like oxygen. I have suggested the liquor to several surgical and medical friends at different hospitals as a general dressing, antiseptic and clean, immediately deodorising all foul wounds and ulcers. In cancer, syphilis, lupus, and rodent ulcer I have so far great hopes it may prove the most valuable antiseptic dressing we have; also as a spray in diphtheria, foul sore-throats, and in uterine medication. I hope soon to send a short account of cases that I have had under my observation since last October dressed with the chlorine liquor. It is especially destructive to the bacillus staphylococcus aureus, typhosus, diphtheriæ, anthracis, and coli. Probably, also, we may find it to be so with the cancer, syphilis, and leprosy bacillus; but of these I shall have more to say when my cultivations are further developed. I do not wish it to be thought that I put the view forward that "the use of liquor chlori is a new antiseptic dressing," but from all I can gather it has not been applied in this simple form, neither do I believe the valuable antiseptic germicidal character of chlorine in solution has been sufficiently estimated in surgical and medical practice.

I am, Sirs, yours truly,

Harley-street, W., Feb. 14th, 1897. JAMES STARTIN.

A. B. C.—There were two books—"Baby Buds" for very young children, and "The Human Flower" for older children. They were published by Mrs. Wolstenholme Elmy, Buxton House, Congleton. Our reviewers did not recommend these works to the favourable consideration of parents.

A. V. T. is requested to repeat the communication.

THE REVOLVER NUISANCE.

"As many as seven boys, at two London police-courts yesterday, were charged with disorderly conduct involving the use of revolvers," says the *Globe* of March 9th. "The eldest of the lot, who was said to be eighteen years, but looked younger, got a month's hard labour; the youngest, fifteen years, was let off with a fine, while the rest were remanded." Short terms of imprisonment will not stop this nuisance. Tradesmen should not be allowed to sell deadly weapons to lads in their teens, and legislation in the matter is urgently required. A bullet wound the result of an accident is far too frequent a case in the wards of our general hospitals, and although the Roentgen rays permit of the easy location of the foreign body, the scarce beds in these over-worked charities ought not to be regularly required to remedy the mischief done by a few careless young larrikins.

Douche writes: "Is there in London a well-appointed establishment where good-class patients (male and female) can be sent for cold and hot douches?"

M.D.—We shall be happy to receive the paper, but we cannot promise insertion until we have seen it.

MOTOR CARS.

To the Editors of THE LANCET.

SIRS,—Perhaps some of your readers may be interested in hearing some of my experience during the past six months with motor cars for practical work. I have been using one since the commencement of October and during all the bad weather; during this time I have found it very satisfactory. I have run one sixty miles a day for several consecutive days and in all sorts of weather and on all sorts of roads. The vibration when running is less than with a horse and trap and the speed averages ten to twelve miles on the level and five to six miles an hour up-hill. The cost of running is about ½*d.* per mile for a two-seated car. These have 1½-horse power motors on the gas-engine principle, using petrol vapour, and give off practically no smell. As such large numbers of persons are desirous of having information about them and as I am an enthusiast in regard to this new development, I have written a small book giving a short history of their development and present position, with descriptions of steam, oil, and electrical methods, and hints on management and working, illustrated. Shall be pleased to send copies of the same to any who are interested post free on receipt of six stamps.

I am, Sirs, yours faithfully,

Burleigh Villa, Harrogate, March 2nd, 1897. J. C. LUKE.

"PARKE MEMORIAL FUND."

To the Editors of THE LANCET.

SIRS,—I should be much obliged if you would publish the subjoined list of 10*s.* subscribers to the late Surgeon-Major Parke's memorial. My letter of appeal appeared in THE LANCET of Jan. 30th.

I am, Sirs, yours truly,

Canterbury, March 3rd, 1897. PUGIN THORNTON.

Yeomanry surgeons: H. P. Symonds, G. T. Phillips, C. Stonham, C. T. Street, G. W. Welchman, E. Kingscote, H. W. Kiallmark, W. J. Naismith, and J. S. Jones.—Mrs. W. Tattersall, B. Pollard, Sir H. B. Poland, C. Hazard, G. L. Hazard, Lord Harris, Sir Wm. Jenner (second subscription), the Misses E. and L. Wardes, H. T. Butlin, R. J. Godlee, A. Critchett, General Sir P. Fielding, J. H. Mummery, C. Awdry, and A. Clark.—Surgeon-Major S. Westcott, per Messrs. Holt and Co., £1.

Dr. D. H. Attfield desires us to contradict the assertion that he has been appointed to succeed Dr. Mackie as a member of the Quarantine Board at Alexandria.

A USEFUL INNOVATION.

THE Victory Cycle Syndicate, of 42, Old Broad-street, request us to state that their Red Cross Victory cycles can be hired by members of the medical profession at £6 10*s.* per annum—an arrangement which will doubtless be welcomed by those who would prefer to hire rather than purchase a machine. As this is the only firm, so far as we are aware, making an offer of this kind, the information may be useful to some of our readers.

Fibula will find what he requires in the *American Journal of Obstetrics.*

A ROENTGEN DIAGNOSIS OF GOUT.

A RECENT communication by MM. Potain and Serbanesco at the Académie des Sciences is of interest as suggesting a new means of differential diagnosis between the deposits of gout and rheumatism. According to these observers the former show when submitted to the x rays a translucent central part limited by a narrow dark border, which again is enclosed in a wider opaque area. This central clear portion is absent in the rheumatic thickening. It is attributed to the greater permeability to the rays of urate of soda as compared with rheumatic deposits and also with the normal bone salts, a conclusion which they have confirmed by further independent observations.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 11th, 1897.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Dry Bulb	Wet Bulb.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Rainfall.	Remarks at 8.30 A.M.
Mar. 5	29·27	S.W.	38	37	93	51	36	...	Cloudy
,, 6	29·58	W.	41	40	61	47	38	0·13	Overcast
,, 7	30·03	N.E.	39	38	71	45	36	...	Cloudy
,, 8	30·12	N.E.	39	36	56	44	38	...	Hazy
,, 9	29·98	E.	39	37	71	49	36	0·25	Hazy
,, 10	29·94	S.W.	43	41	92	53	39	0·06	Fine
,, 11	30·06	W.	40	39	76	50	37	...	Hazy

During the week marked copies of the following newspapers have been received:—*Scarborough Post, Chard and Ilminster News, Malvern Advertiser, Bromsgrove Messenger, Ilfracombe Gazette, Evesham Journal, Maidstone Journal, Times of India, Pioneer Mail, East Devon Advertiser, Western Morning News, Manchester Guardian, Birmingham Gazette, Leicester Post, Newcastle Chronicle, Times of Ceylon, Glasgow Herald, South Wales Echo, Bradford Observer, Liverpool Courier, Woking Mail, Architect, Worcestershire Herald, Sussex Daily News, Builder, Liverpool Daily Post, Rochester Journal, Chatham News, Cannock Chase News, Wolverhampton Chronicle, Leeds Mercury, Rugby Advertiser, Citizen, Halifax Guardian, Yorkshire Post, Newbury Weekly News, Hastings News, Bristol Mercury, Bath Journal, Kentish Express, Sheffield Telegraph, Birmingham Post, East Anglian Times, North-Eastern Gazette, Brighton Gazette, Sanitary Record, Citizen (Gloucester), City Press, Reading Mercury, Local Government Chronicle, Hertfordshire Mercury, Weekly Free Press and Aberdeen Herald, Glasgow Evening News, Church of England Pulpit and Ecclesiastical Review, Surrey Advertiser, Mining Journal, Local Government Journal, North British Daily Mail, Wilts City Mirror, Western Daily Press, Cambria Leader, East London Advertiser, Preston Guardian, West Middlesex Herald, Brighton Gazette, Whitby Times, Stowmarket Courier, &c., &c.*

Communications, Letters, &c., have been received from—

A.—Dr. F. P. Atkinson, Surbiton; Messrs. Arnold and Sons, Lond.; Dr. J. L. Andrew, Stockport; A. B. C., Leicester; Mons. J. Astier, Paris; Dr. Anderson, St. Marys, Scilly Isles; Autotype Co., Lond.; Aberystwyth Corporation, Town Clerk of; Argor, Lond; Messrs. Armour and Co., Lond.; Apollinaris Co., Lond.; A. B., Storrington; Mr. A. Adams, Lond; Prof. Attfield, Lond.; Dr. J. Adams, Lond.; Alpha, Laggan, N B.

B.—Mr. H. C. Burdett, Lond.; Dr. P. M. Braidwood, Amersham; Messrs. Baillière, Tindall, and Cox, Lond.; Mr. F. Brooke, West Bridgford; Bristol Electric Safety Lamp Works, Lond; British Empire Type-Setting Machine Co, Lond.; Dr. C. P. Bartley, Shell Knobb, Mo., U.S.A.; Bradford Infirmary, Sec. of; Messrs. Burroughs, Wellcome, and Co., Lond.; Dr. G. A. Broughton, Pomona, U.S.A.; Messrs. A. and C. Black, Lond.; Mr. H. G. Barron, Southport; Messrs. C. Barker and Sons, Lond; Bootle Borough Hosp., Sec. of; Messrs. Blondeau et Cie, Lond.

C.—Dr. Harry Campbell, Lond.; *Cape Times*, Cape Town, Editor of; Cancer Hosp., Lond., Sec. of; Mr. W. Croskery, Sheffield, Dr. W. Collingridge, Lond.; Messrs. Chalmers, Guthrie, and Co., Lond.; Messrs. H. and W. Cox, Leicester; Messrs. Cassell and Co., Lond.; C. M., Shelton; Mr. W. A. Creedon, Lond.; Chesterfield Rural District Council, Med. Officer of Health of; Mr. P. S. Chandra, Madras, India; Coventry and Warwickshire Hosp., Coventry, Sec. of; College of Preceptors, Lond., Sec. of.

D.—Dr. R. Dunbar, Glasg.; Mr. William Day, Victoria-park; Dr. A. T. Davis, Lond.; Dental Hosp. of London, Sec. of; Messrs. A. Durant and Co., Lond.; Messrs. Down Bros., Lond.; District Infirmary and Children's Hosp., Ashton-under-Lyne; Messrs. W. Dawson and Sons, Lond.; Die Barth'sche Buchhandlung, Aachen, Germany.

E.—Mr. H. T. Evans, Blackwood; Eckhorn, Lond.; Messrs R. Ellis and Son, Ruthin; East-End Mothers' Home, Lond., Sec. of; Dr. L. Elkind, Lond.; Dr. J. W. Eyre, Lond.; Dr. J. Edmunds, Lond.

F.—Dr. P. C. Fenwick, Lond.; Facilis, Lond; Fistula, Portsmouth; Mr. J. Featherstone, Withington.

G.—Dr. W. R. Gowers, Lond; Dr. L. G. Guthrie, Lond.; Mr. J. H. Goldwin, Rochester; Dr. Lachlan Grant, Edinbane; Globe Advertising Co., Aston Clinton; Guy's Hosp. Medical School, Lond., Dean of; Gt. Yarmouth Borough, Surveyor of; General Hosp., Birmingham, House Governor of.

H.—Mr. Gerard D. Howlett, Lond; Hospital Reform Association, Cardiff, Hon. Sec. of; Miss Harriett Harris, Loughborough; Hospital Saturday Fund, Lond., Sec. of; Mr. T. G. Horder, Cardiff; Mrs. H. Harris, Quorn; Mr. T. Hawksley, Lond.; Messrs. W. Hill and Co., Lond.; Dr. E Hobhouse, Brighton; Howard Association, Lond., Sec. of; Messrs. Hatch, Mansfield, and Co., Lond.; Mr. J. Heywood, Manchester; Herts, Lond.; Messrs. C. J. Hewlett and Son, Lond.

I.—Income-Tax Adjustment Agency, Lond.

J.—Dr. J. Johnston, Bolton; Dr. Jón Jónsson, Lond; Jenner Institution for Calf Lymph, Battersea, Sec. of.

K.—Mr. B. Kuhn, Lond; Messrs. C. Kinloch and Co., Lond.; Dr. J. S. Keser, Lond.; Kidderminster Infirmary, House-Surg. of; Mr. R A Kirby, Dartmouth; Messrs. Keith and Co., Edin.

L.—Messrs. Lee and Martin, Birmingham; Messrs. Lee and Nightingale, Liverpool; Lake Girard Mica System, Quebec, Canada; London Temperance Hosp., Sec. of; Leicester Bacteriological Institute, Director of; Mr. R. C. Lucas, Lond.; Ladyweil Sanatorium, Salford, Med. Supt. of; Dr. T. Laird, Heywood; Lincolnshire Publishing Co., Lincoln.

M.—Dr. C. F. Moore, Dublin; Manchester Medical Society, Sec. of; Middlesex Hosp., Lond., Sec.-Supt. of; M.D., Honiton; Dr. H. C. Marr, Lenzie, near Glasg; Surg.-Maj. C. B. Maitland, Neemuch, Central India; Dr. A. MacGregor, Lond.; Mr. F. J. Moir, Moffat; Mr. A. S. Morton, Lond.; M. E. G., Lond.; Maltine Manufacturing Co., Lond.; Manchester Royal Eye Hosp., Sec of; Messrs. H. Marshall and Co., Lond.; May's Advertising Agency, Lond; Mental, Lond.; Mr. E. W. Marshall, Mitcham; Mr. H. W. Mills, Ruardean; Mr. S. B. Mason, Pontypool; Manchester Southern Maternity Hosp., Sec. of. Dr. R. A. Morris, Bedlington.

N.—Nottingham General Hosp., Sec. of.

O.—Official Receiver in Bankruptcy, Coventry.

P.—Mr. F. Page, Newcastle-on-Tyne; Partner, Fulham; Mr. P. Pope, Fulham; Dr. G. L. K. Pringle, Bridgwater; Dr. Pendleton, Brighton; Messrs. Parke, Davis, and Co., Lond; *Pharmaceutical Journal*, Lond., Editor of; Mr. W. de C. Prideaux, Dorchester; Mr. C. E. Paget, Salford; Peat Industries' Syndicate, Lond., Manager of; Dr. George Parker, Clifton.

Q.—Queen Charlotte's Lying-in Hosp., Lond, Sec. of; Q. E. D., Lond.

R.—Mr. H. A. Rawlings, Lond.; Royal Academy of Medicine in Ireland, Dublin, Gen. Sec. of; Dr. R. R. Rentoul, Liverpool; Rebman Publishing Co, Lond., Managing Director of; Dr. W. E. Risdon, Lond; Royal Botanic Society of London, Sec. of; Royal Aquarium, Lond., Managing Director of; Dr. S. J. Ross, Bedford; Radia, Lond.; Mr. F. Reynolds, Harrogate; Royal Alexander Hosp. for Sick Children, Brighton, Sec. of; Dr. E. W. Roughton, Lond.; Dr. G. A. Reid, Southsea; Royal Hosp. for Diseases of the Chest, Lond., Sec. of.

S.—Dr. R. W. Smith, Lond.; Messrs. Street and Co., Lond.; Mr. R. Nitch Smith, Lond; Dr. T. Shennan, Edin.; Dr. T. W. Shortridge, Honiton; Mr. J. Startin, Lond.; St. George's Hosp. Medical School, Lond., Dean of; Dr. R. P. Smith, Lond.; Mr. J. J. Stack, Lond.; Mr. W. S. Scott, Manchester; Sussex County Hosp., Brighton, Sec. of; Messrs. Stubbs, Croydon; Mr. E. C. Smith, Ingatestone; Mr. H. Sell, Lond.; Messrs. S. Smith and Co., Lond.; Mr. W. G. Spencer, Lond; Messrs. Scott, Craig, and Brown, Glasg; S. W., Lond.; Sanitary Engineering and Ventilation Co., Lond.; Dr. G. Smith, Manchester; St. Albans Urban Sanitary District, Med Officer of Health of; Dr. J. G. Smith, Bristol; Dr. J. F. W. Silk, Lond.

T.—Dr. C. B. Taylor, Nottingham; Dr. J. C. Thresh, Chelmsford; Prof. F. Trombetta, Messina, Italy; Sister Julia Tudor, Barnet; Mr. W. G. Thistle, Lond.; Dr. W. A. Turner, Lond.; Dr. J. Taylor, Belfast.

U.—University College, Bristol, Sec. of; University College Hosp., Lond., Sec. of; Urban District Council of Cockington, Medical Officer of.

W.—Dr. D. Walsh, Lond.; Mr. J. J. Weaver, Southport; Dr Walz, Roncegno, South Tyrol; Messrs. S. J. Waring and Sons, Lond.; Messrs. West, Newman and Co., Lond; Dr. A. Warde, Folkestone; Messrs. J. Wright and Co., Bristol; Western General Dispensary, Lond., Hon. Sec. of; Mr. W. M. Wills, Lond.; Dr. A. Wilson, Leytonstone.

Letters, each with enclosure, are also acknowledged from—

A.—A. M., Cheltenham; A. T., Lond.; A. B. L., Lond.; Armorial, Lond.; A. H. B, Lond.; A. Z., Lond.; Alpha, Lond.

B.—Mr. E. G. Byrne, Grangetown; B. G. H, Lond.; Blobbs, Lond; Bradford, Lond.; Rev. W. G. Baker, Batcombe; Messrs. Bates, Hendy, and Co., Reading; Borax, Lond.; Mr. R. H. Bell, Sunderland; Dr. H. P. Berry, Grantham; Mr. L. A. Barrow, Woolwich; Mr. F. A. Bush, Attleborough.

C.—Mr. A. C. Champati, Kishnaggar, India; Cantab, Lond.; C. E. B., Lond.; Cramer, Lond.

D.—Messrs. A. de St. Dalmas and Co, Leicester; Derby County Asylum, Mickleover, Clerk of; D., Lond; Dr. C. Dukes, Rugby; Dub., Lond.

E.—Mr. H. B. Edwards, Senny Bridge; Mrs. Elgum, Gosport; E. M. H., Lond; Dr. J. H. Ewart, Clifton; Excelsior, Lond.; Edin, Lond.; E. N. P., Lond.

F.—Dr. R. Fairweather, Chiddingfold; Fides, Lond.; Dr. G. K. Finlay, Littleborough; Forceps, Lond.; Miss C. M. Fox, Shelton.

G.—Dr. H. W. Gardner, Shrewsbury; Mr. B. Greaves, Sheffield; Galen, Lond.; Gallus, Lond.; Messrs Gilyard Bros., Bradford; Dr Galloway, Wrekenton.

H.—Surgeon-Captain P. Hehir, Bombay; Messrs Haasenstein and Vogler, Geneva; H.S.W., Ashton; Humphreys, Ltd., Lond.

I.—Dr. C. A. Innes, Lond.

J.—Mr. J. K. Jones, Llanrhaidd; J., Oswestry; J. Y., Lond.

K.—Mr. T. S. Keys, Ton Pentre.

L.—Mr. H. K. Lewis, Lond.; Dr. R. Liveing, Lond.; Mr. R. A. E. Lowry, Birkenhead.

M.—Mr. C. F. Myers-Ward, Manchester; M. A. B., Lond.; Manchester Hosp. for Consumption, Sec. of; Messrs. Mullock and Sons, Newport, Mon.; M., Manchester; Dr. A. F. Mackenzie, Inverness; Mr. J. R. MacKinlay, Gt. Horton.

O.—Mr. M. M. T. Oakes, Kilkee, co. Clare; Old Kent-road (624), Lond.

P.—Dr. W. H. Peake, Shenley; Parvus, Lond.; Primus, Lond.; Paysician, Lond.; Len, Lond.

R.—Mr. T. O. D. Russell, Shirebrook; Mr. W. H. Richardson, Pont Newydd; Dr. J. D. Rawlings, Lond.; Dr. R. M. Richards, Dolgelly; R. J., Pontymister; Dr. F. Rhodes, Lond.

S.—Mr. W. Shand, Lossiemouth; Sartor, Lond.; Mr. D. Sen, Buxar, India; Messrs. J. and W. Stewart, Lond.; Dr. F. Sydenham, Walsall; Mr. C. D. Summers, Surbiton; Surgeon, Lond.; Mr. K. Sylvester, Trowbridge; Senior, Lond.; Messrs. A. F. Sharp and Co., Glasg.

T.—Mr. J. Todd, Selby; The Thom, Hayes; Terrol Co., Lond.; Dr. R. R. Threadgale, Lond.; Mr. J. Thin, Edin.; Tempus, Lond.; Trecent, Lond.; Mr. C. E. Tangye, Redruth.

U.—Ultimus, Lond.

W.—Dr. T. E. D. White, St. Just; Warneford Asylum, Oxford, Med. Supt of; Mr. S. Wand, Leicester; Dr. D. Welsh, Wrenbury; Miss Webb, Lond.; Mr. R. Walker, Aberdeen; Mr. C. J. Wilkinson, Windsor; West End Pathological Laboratory, Lond., Sec. of; W. H. H., Lond.; Mr. W. Whiteley, Lond.; Wiltou, Lond.

X.—Xanthos, Lond.

SUBSCRIPTION.

POST FREE TO ANY PART OF THE UNITED KINGDOM.

One Year	£1 12 6
Six Months	0 16 3
Three Months	0 8 2

POST FREE TO THE CONTINENT, COLONIES, UNITED STATES, INDIA, CHINA, AND ALL PLACES ABROAD.

One Year	£1 14 8
Six Months	0 17 4
Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to Mr. CHARLES GOOD, Manager, THE LANCET Office, 423, Strand, London.

ADVERTISING.

Books and Publications	... Seven Lines and under	£0 5 6
Official and General announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6
First Page (under Contents) (Books only)	when space available Five Lines and under	0 5 6
	Every additional Line	0 1 0
Quarter Page		1 10 0
Half a Page		2 15 0
An Entire Page		5 5 0

Terms for Position Pages and Serial Insertions on application.

NOTICE.—Advertisers are requested to observe that it is contrary to the Postal Regulations to receive at Post Offices letters addressed to fictitious names or initials only.

An original and novel feature of "THE LANCET General Advertiser" is a special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Agent for the Advertisement Department in France—J. ASTIER, 8 Rue Traversière, Asnières, Paris.